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ARTICLES

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BOOK REVIEWS

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OTHER DEPARTMENTS

HARRY ALVIN MILLIS

Thirty-sixth President of the American Economic Association, 1934

Harry Alvin Millis was born in Paoli, Indiana, May 14, 1873. He died in Chicago June 25, 1948.

After receiving his A.B. degree from Indiana University in 1895 and his M.A. in 1896, Millis went to the University of Chicago. Among his fellow students were Wesley C. Mitchell, H. Parker Willis, Henry R. Hatfield, H. J. Davenport, Simon James McLean, and George G. Tunell. He received his Ph.D. degree there in 1899 and after teaching at the Universities of Arkansas, Stanford, and Kansas for a number of years, he returned to the University of Chicago in 1916. In 1928, he became chairman of the Economics Department, which post he held until 1938.

Professor Millis was very active in the affairs of the Association. He was a member of the Executive Committee 1921-23, chairman of the Program Committee in 1934, a representative on the Social Science Research Council, 1930-35, and President of the Association in 1934. The title of his presidential address was, "The Union in Industry: Some Observations on the Theory of Collective Bargaining." Although he was best known for his work in the field of labor, his early interest was in public finance. He did practical and pioneering work in scientific tax assessments when he was still an assistant professor at Stanford and he participated in the organization of the National Tax Foundation in 1907.

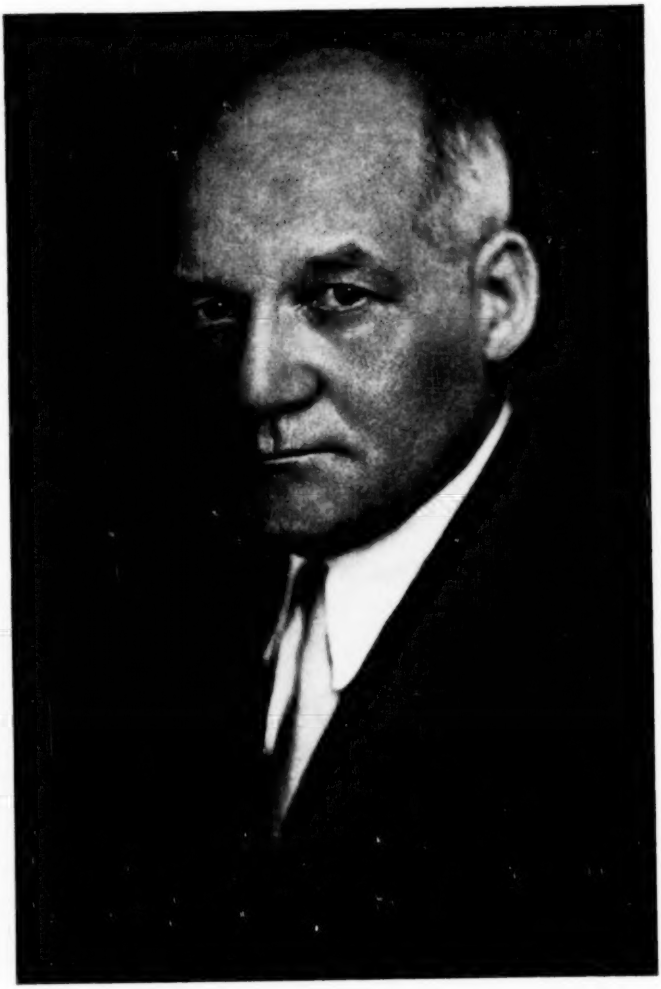
Professor Millis also served as director of the National Bureau of Economic Research and was a founder and director of the Agricultural Economics Foundation.

Throughout most of his career, he was engaged in some kind of public service. From 1908 to 1910, he was director of investigations for the Rocky Mountain and Pacific states for the United States Immigration Commission; he directed a study of health insurance for the state of Illinois in 1917; from 1919 to 1921 he was chairman of the Trade Board of the Chicago Men's Clothing Industry and from 1921 to 1923 and 1937 to 1940 chairman of the Board of Arbitration; he was a member of the first National Labor Relations Board from 1934 to 1935 and chairman of the Board from 1940 to 1945, when failing health forced him to resign. In the fall of 1945, he returned to the University of Chicago to become senior adviser to the newly formed Industrial Research Center and to begin the analysis of the development of our national labor policy which he had helped so much to formulate.

Millis' writings were chiefly in the field of industrial relations. The most authoritative and comprehensive work is perhaps the three-volume series on the *Economics of Labor*, done in collaboration with Royal E. Montgomery, of Cornell University. The Twentieth Century Fund industry studies in *How Collective Bargaining Works* which he planned and edited set the pattern for many case studies in this field, and his last project, done in collaboration with Emily Clark Brown, of Vassar College, *From Wagner Act to Taft-Hartley*, was nearly completed at the time of his death.

A memorial, prepared by E. C. Brown, P. H. Douglas, F. H. Harbison, Louis Lazaroff, W. M. Leiserson, and S. E. Leland, was published in the June, 1949, *American Economic Review*, pages 742-750.

Number 36 of a series of photographs of past presidents of the Association.



H.A. Innis

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ELASTICITIES, CROSS-ELASTICITIES, AND MARKET RELATIONSHIPS

By ROBERT L. BISHOP*

A number of attempts have been made to distinguish the various types of market situation of sellers in terms of implied elasticities and cross-elasticities of demand. The use of cross-elasticities to characterize competitive relationships between firms seems to have been suggested first by Kaldor.[1] The same conception was then developed more fully by Triffin.[2] The interpretations advanced by these two pioneers have subsequently been adversely criticized by a number of writers, most of whom have proposed alternative interpretations of their own.[3] As a result, there is still no settled consensus as to what elasticities and cross-elasticities really are implied by the various market situations of pure and mixed monopoly and competition. The differences of opinion that have been expressed reflect, it seems to me, both some relatively simple misunderstandings and some fundamental inherent difficulties.

* The author is associate professor of economics at the Massachusetts Institute of Technology. He wishes to express special indebtedness to Joe Bain for his constructive criticisms and for having corrected at least one major error in the first draft of this paper.

[1] Nicholas Kaldor, "Mrs. Robinson's 'Economics of Imperfect Competition,'" *Economica* (new series), Aug. 1934, I, 335–41, esp. 335 and 340; and "Market Imperfection and Excess Capacity," *Economica* (new series), Feb. 1935, II, 33–50, esp. 35 and 46.

[2] Robert Triffin, *Monopolistic Competition and General Equilibrium Theory* (Cambridge, 1940), esp. pp. 102 ff.

[3] S. Weintraub, "The Classification of Market Positions: Comment," *Quart. Jour. Econ.*, Aug. 1942, LVI, 666–73; E. F. Beach, "Triffin's Classification of Market Positions," *Can. Jour. Econ. Pol. Sci.*, Feb., 1943, IX, 69–74; Theodore Morgan, "A Measure of Monopoly in Selling," *Quart. Jour. Econ.*, May 1946, LX, 461–63; William Fellner, *Competition Among the Few* (New York, 1949), pp. 50–54; A. G. Papandreou, "Market Structure and Monopoly Power," *Am. Econ. Rev.*, Sept. 1949, XXXIX, 883–97; and E. H. Chamberlin, "Measuring the Degree of Monopoly and Competition," a paper delivered at a round table of the International Economics Association at Talloires (Haute Savoie), Sept. 3-8, 1951, to be published in late 1952 or early 1953 in a collection of the round table papers provisionally titled *Monopoly and Competition and their Regulation.*

I. *The Basic Types of Market Situation*

A principal advantage of the elasticity and cross-elasticity technique of market classification is its flexibility in characterizing market relationships that are asymmetrical, either because the firms do not constitute well-defined "groups" or because the firms differ greatly in size. In order to straighten out the logic of implied elasticities and cross-elasticities, however, it is well to concentrate first on the relatively straightforward cases involving (a) a reasonably sharp grouping of related firms, at least from the *i*th firm's point of view, and (b) no strong asymmetries.

Accordingly, the following are the principal alternative situations of a simple and symmetrical kind in which the *i*th firm may find itself, together with the fundamental characteristics of each:

1. Pure competition—many other producers of perfect substitutes, with no member of the group producing more than a small fraction of the total output of all;
2. Pure oligopoly—at least one other and at most few other producers of perfect substitutes, with each firm producing a substantial fraction of the total output;
3. Differentiated competition—many other producers of relatively close but imperfect substitutes, with each firm producing a small fraction of the combined output;
4. Differentiated oligopoly—at least one and at most few other producers of relatively close but imperfect substitutes, with each firm producing a substantial fraction of the combined output;
5. Pure monopoly—no other producers of even relatively close substitutes, with the *i*th firm producing only a small part of the whole economy's output.

The fact that *perfect* substitutes are produced by one or more other firms is thus the distinguishing feature of "pure" competition or oligopoly, by contrast with the *imperfect* substitutes under "differentiated" competition or oligopoly. Similarly the "manyness" of the rival firms is the common characteristic of "competition," pure or differentiated, by contrast with the "fewness" of rivals under either form of "oligopoly."[4] This rough contrast in terms of number and size of firms, however, only stands for a more fundamental one in terms of market be-

[4] Obviously, "competititon" is being used here in a narrow sense, simply in contrast to "oligopoly." There is a broader meaning, of course, that includes oligopoly as a competitive relationship also.

Of the terms I use, the only one that has not been widely used before is "differentiated competition." It fits very well, however, with such familiar terms as pure competition, pure oligopoly, and differentiated oligopoly; and some such term, it seems to me, is badly needed as a substitute for the lengthy "monopolistic competition with large numbers" or the ponderous "atomistic heteropoly."

havior: the essential feature of "oligopoly" is a significant *interdependence* between the price-output decisions of a given *pair* of rival firms, there being no such interdependence under the atomism of "competition." Finally, a "pure monopoly" is also characterized by substantially complete independence of its business decisions from those of any other *one* firm in the econony, but for the reason that there are *no* close substitute products. It is significant that oligopolistic interdependence is avoided both when there are many relatively close substitutes and when there is none.

II. *The Concepts of Elasticity and Cross-Elasticity*

A main reason for the chaos of disagreement in this area is that insufficient care has been taken to specify exactly what kinds of elasticities and cross-elasticities are being used. Oddly enough at this late date, it must first be emphasized that the concepts in question are elasticities and cross-elasticities of *demand*. This is necessary because some writers have casually qualified the concepts with supply restrictions—not consistently, to be sure, but only in the case of pure competition. As will be brought out later, these writers have not stopped to notice the profound anomalies that are implied by their half-breed supply-demand elasticities; nor have they worried about the inconsistency of applying one kind of test to pure competition and a quite different one to the other market situations.

Second, it is necessary to specify the *ceteris paribus* assumptions that underlie the demand functions with respect to which the elasticities and cross-elasticities are defined. This choice narrows down to "other prices" *versus* "other quantities." In the oligopolistic cases, of course, neither of these *ceteris paribus* concepts is even approximately "realistic," since oligopolistic interdependence implies that other firms typically *will* readjust their prices and quantities in response to a price-quantity move by the *i*th firm. But this does not justify attempting to incorporate these actions and reactions in a set of *mutatis mutandis* demand functions in the present context (even if oligopoly were sufficiently determinate for this to be confidently done). Since the sole purpose of the present analysis is to distinguish the various possible market relationships, it is obviously necessary to use tests that are uniform in their application. This consideration alone limits us to the *ceteris paribus* concepts. After all, our purpose is not the ambitious one of solving the oligopoly problem, but only of identifying its existence; and this can be done in terms of what would happen *if* other prices (or other quantities) are constant, whether or not they are likely to be so in actuality.[5]

[5] Weintraub is the only one of Triffin's critics to have suggested explicitly that cross-elasticity be redefined in terms of the *actual* change of one firm's quantity in the light of the

There are two species of elasticity and cross-elasticity that have been used to describe the competitive situation of a given firm. One is the more usual *price* elasticity, which measures the percentage change in a quantity induced by a given percentage change in a price, with other *prices* constant. The other is a *quantity* elasticity, and it measures the percentage change of price induced by a given percentage change of quantity, with other *quantities* constant. The one is not simply a reciprocal of the other (although it may be approximately so in some situations), because the two species involve different *celeris-paribus* assumptions—"other prices" in the one case and "other quantities" in the other.

A. *The Price Elasticities.* Conventional price elasticities, both "own" and "cross," are based on the following conception of demand for the products of all the various firms in the economy, where q is quantity demanded, p is price, and subscripts refer to firms:

$$
\begin{aligned}
q_1 &= q_1(p_1, p_2, \cdots p_i, \cdots p_j, \cdots p_n) \\
&\cdots\cdots\cdots\cdots\cdots\cdots \\
q_i &= q_i(p_1, p_2, \cdots p_i, \cdots p_j, \cdots p_n) \\
&\cdots\cdots\cdots\cdots\cdots\cdots \\
q_j &= q_j(p_1, p_2, \cdots p_i, \cdots p_j, \cdots p_n) \\
&\cdots\cdots\cdots\cdots\cdots\cdots \\
q_n &= q_n(p_1, p_2, \cdots p_i, \cdots p_j, \cdots p_n).
\end{aligned}
$$

"Own" elasticity is then of the form, $E_{ii} = [(\partial q_i/\partial p_i) \cdot (p_i/q_i)]_p$, which signifies the ratio of the percentage change of quantity that customers *would like to buy* from the ith firm to an infinitesimal percentage change of that firm's price, with all other *prices* constant but with the quantities that customers would like to buy from other firms varying as the buyers see fit. Cross-elasticity is of the form, $E_{ji} = [(\partial q_j/\partial p_i) \cdot (p_i/q_j)]_p$; and it has an analogous verbal interpretation—the ratio of the percentage change of the jth quantity demanded to an infinitesimal percentage change of the ith price, again with other *prices* constant.

B. *The Quantity Elasticities.* Quantity elasticities are defined with respect to a contrasting conception of demand price as a function of quantities supplied:

actual change of its price induced by a given change of another firm's price (*op. cit.*, pp. 668–71); but similar improvisations seem to be just below the surface of some of the misgivings expressed by others of Triffin's critics as well. *Cf.* Triffin's "Reply" (with which I quite agree), following Weintraub's note (pp. 674–75). Weintraub himself points out very well the anomalies of his own proposal—*e.g.*, the reversed sign of "cross-elasticity" when a price cut by an oligopolist leads to matching price cuts by his rivals and a consequent increased quantity sold by all. As Triffin aptly remarks, such "odd results" flow from Weintraub's proposal, not his own.

$$p_1 = p_1(q_1, q_2, \cdots q_i, \cdots q_j, \cdots q_n)$$
$$\cdots\cdots\cdots\cdots\cdots\cdots$$
$$p_i = p_i(q_1, q_2, \cdots q_i, \cdots q_j, \cdots q_n)$$
$$\cdots\cdots\cdots\cdots\cdots\cdots$$
$$p_j = p_j(q_1, q_2, \cdots q_i, \cdots q_j, \cdots q_n)$$
$$\cdots\cdots\cdots\cdots\cdots\cdots$$
$$p_n = p_n(q_1, q_2, \cdots q_i, \cdots q_j, \cdots q_n)$$

These demand-price functions are the inverse of the demand-quantity functions immediately above. For the present, these demand-price functions are assumed to be determinate and single-valued—that is, monotonic and without vertical ranges of indeterminate demand price at one or more quantities. The possibility of such indeterminacy will be commented upon later.

Simple elasticity is then $e_{ii}=[(\partial p_i/\partial q_i) \,.\, (q_i/p_i)]_q$, the ratio of the percentage change of price that customers are willing to pay for the product of the ith firm to an infinitesimal percentage change of the quantity offered by that firm, with all other firms' *quantities* constant but with their prices varying as needed to clear the market. Cross-elasticity of this type is $e_{ji}=[(\partial p_j/\partial q_i).(q_i/p_j)]_q$, the ratio of the percentage change of one firm's price to an infinitesimal percentage change of another firm's quantity, again with all other *quantities* constant.

E_{ii} and e_{ii} are both negative in all usual cases. To simplify verbal discussion, when I speak of them as being large or small this should be understood to refer to their absolute values—without regard to sign. The two coefficients of "own" elasticity, although only very rarely exact reciprocals, are usually approximately so in the non-oligopolistic cases, when it makes no significant difference whether "other prices" or "other quantities" are held constant.[6]

The cross-elasticities E_{ji} and E_{ij} are positive between competitors and negative between complementary firms; but such elasticities as e_{ji} and e_{ij}, by contrast, are negative for competitive firms and positive for complementary ones.[7] Since I shall be mainly concerned with competitive relationships, I adopt the same convention as above in referring to large and small magnitudes of e_{ji} and e_{ij} without regard to sign, the

[6] E_{ii} reflects the Bertrand assumption of other prices constant, while e_{ii} reflects the Cournot assumption of other quantities constant. Under oligopoly, of course, the two assumptions have greatly contrasting implications, and accordingly neither is realistic; but in the absence of oligopolistic interdependence the two assumptions *are* approximate equivalents, so either is at least roughly acceptable as a model of realistic behavior.

[7] The mathematician would say that the matrix of all E_{ij} terms is the algebraic "inverse" of the e_{ij} matrix.

negative value of those coefficients being understood from the context of the competitive relationship.

Although E_{ji} and e_{ij} have a superficial appearance of being reciprocals—and similarly E_{ij} and e_{ji}—they are not. For one thing, they typically differ in sign; and, in general, the effect on the jth quantity of a change in the ith price (with all other prices constant and other quantities changing as they may) is a quite different phenomenon from the effect on the ith price of a change in the jth quantity (with all other quantities constant and the other prices changing as they may). Similarly, there is no necessary presumption that E_{ji} and E_{ij}—or e_{ji} and e_{ij}—are exactly or even approximately the same, except by the accident of symmetry in the actual market relationships between the two firms.[8]

III. *The Current Conflicts of Interpretation*

The widest and clearest of the differences of opinion among the various writers on this subject are those between Triffin and Chamberlin; so it is convenient to take these two authorities as the main antagonists in the debate.

According to Triffin, as the cross-elasticity E_{ij} is (1) infinite, (2) positive finite, or (3) zero, this represents a progression from (1) homogeneous competition (*i.e.*, pure competition or pure oligopoly) to (2) heterogeneous competition (*i.e.*, differentiated competition or differentiated oligopoly) to (3) pure monopoly. Triffin then distinguishes the subcases in the first two categories according as the cross-elasticity e_{ji} is (a) negative small, implying atomistic competition, or (b) negative large, implying an oligopolistic or "circular" relationship.[9]

[8] As measures of the competitiveness or complementarity of the products i and j, such coefficients as E_{ji} and E_{ij} should not be confused with Hicks's measure—*Value and Capital* (Oxford, 1939), Appendix, pp. 309–12. The latter is a simple cross-derivative rather than a cross-elasticity; and, even more important, it refers to a "compensated" change of both price and income (with all other prices constant) such that the income effect of the price change is eliminated. Although it is not intuitively obvious, there happens to be a necessary symmetry in Hicks's measure, whereby "compensated" $\partial q_i/\partial p_j$ equals "compensated" $\partial q_j/\partial p_i$ for each individual consumer. Whenever Hicks's measure implies "strong" competitiveness or complementarity, however, the cross-elasticities E_{ji} and E_{ij} would ordinarily do so too.

[9] Triffin's tests are always formally stated in terms of E_{ij} (the effect of a change in the jth price on the ith quantity) and e_{ji} (the effect of a change in the ith quantity on the jth price). In one sense, this pairing is well suited to his testing of circular versus non-circular relationships: e_{ji} poses the question whether or not a change of quantity by the ith firm will affect appreciably the jth firm's price, and if it does, E_{ij} poses the additional question whether or not further changes of the jth price (in accordance with that firm's policy) will appreciably affect the ith quantity—both effects being necessary to establish the oligopolistic "circularity."

From the point of view of the ith firm, on the other hand, it seems anomalous to use E_{ij} rather than E_{ji}, especially when analyzing the significance of this type of cross-elasticity for its own sake; for the effect of changes in the ith price on the jth quantity then seems to command prior interest. Triffin did not treat this problem explicitly, perhaps because he was assuming symmetry between firms i and j. With symmetry, of course, it makes no difference—

Chamberlin, by contrast, thinks that cross-elasticity with respect to price, E_{ij} or E_{ji}, distinguishes merely (1) non-oligopolistic or "isolated" selling from (2) oligopolistic or "non-isolated" selling, according as this coefficient is (1) zero or (2) greater than zero. He then distinguishes (a) heterogeneous from (b) homogeneous products according as the "own" elasticity E_{ii} is (a) finite or (b) infinite. Chamberlin, incidentally, makes no attempt to distinguish differentiated competition from pure monopoly (as here defined); in his view, both imply a finite E_{ii} and a near-zero E_{ij} or E_{ji}.[10]

Clearly, Triffin and Chamberlin have remarkably different understandings of what the cross-elasticities E_{ij} and E_{ji} signify. To Chamberlin, this type of cross-elasticity significantly different from zero is an unfailing sign of oligopoly, while Triffin thinks it is nothing of the kind —that phenomenon requiring an entirely different test in his scheme. Even more specifically, where Triffin represents pure competition as implying infinite cross-elasticity with respect to price, and differentiated competition as implying merely finite values of that coefficient, Chamberlin thinks that cross-elasticity must be zero (or nearly so) in both of these cases. Obviously something is very wrong somewhere.[11]

IV. *The Significance of Cross-Elasticity With Respect to Price*

To investigate the central disagreement between Triffin and Chamberlin, imagine a group of 101 firms producing differentiated but closely

E_{ij} and E_{ji} can be used more or less interchangeably; but, in anticipation of some later discussion of asymmetries, I prefer to pitch my own discussion primarily in terms of E_{ji}.

[10] This is more or less in accord with his long-standing conviction that there is no such thing as "pure monopoly" short of a simultaneous monopolizing of all economic goods.

[11] Especially since I have chosen Triffin and Chamberlin as the principal antagonists mainly because of the dramatic clarity of their differences, the other combatants should not be neglected.

Kaldor seems to be more or less on Triffin's side; for he says, " 'monopoly' and 'perfect competition' appear as the two limiting cases, where the 'cross-elasticities' are zero or infinite, respectively; and there can be little doubt that the large majority of industrial producers in the real world are faced with imperfect markets in this sense," (*op. cit.*, p. 35, n.). This observation is defective—and only a partial anticipation of Triffin—to the extent that it neglects the oligopoly problem and especially the case of oligopoly with infinite cross-elasticities.

Beach and Fellner seem to agree with Chamberlin that a cross-elasticity significantly different from zero indicates oligopoly. Beach also suggests a classification scheme that is very similar to Chamberlin's in terms of simply "own" and cross-elasticities, but Beach's proposal contains some puzzling inconsistencies. Although Fellner's own proposed classification is quite different and much more complex, resting on both firm-and-firm and firm-and-group cross-elasticities, its validity is subject to the same considerations on which Chamberlin's proposal will be seen to stand or fall.

Morgan and Papandreou agree with Chamberlin as against Triffin only to the extent of criticizing the latter's view that E_{ij} and E_{ji} are infinite under pure competition; but Papandreou, after making this criticism on p. 889 (*op. cit.*), returns to agreement with Triffin on pp. 891, n. and 892. Papandreou also seems to side with Triffin and against Chamberlin as to the implied cross-elasticities under differentiated competition; for he indicates that these are then merely between zero and infinity.

substitute products. The products are physically comparable, and all the firms are producing equal outputs at the same price. Suppose further that E_{ii} for each firm is -5, and that a change of p_i with all other prices constant will have equal effects on the quantities sold by the other 100 firms in the group and no effect whatever on the business of any firms outside the group.

In this simple case, we can readily calculate the cross-elasticity E_{ji} between any two firms in the group. As the ith firm shades its price, it increases its quantity sold q_i by a percentage that is 5 times the percentage cut in p_i, since $E_{ii}=-5$. Since this increase in q_i comes in 100 equal installments from the 100 other identical members of the group, the change in q_i is just 100 times the change in q_j, in both absolute and percentage terms. And since E_{ii} and E_{ji} are both related to the same price change, it follows that E_{ji} is .05—or $-E_{ii}$ divided by 100.

Clearly, with n firms in the group, $E_{ji}=-E_{ii}/(n-1)$. Similarly, if the firms are not all of equal size, but if all other group members still lose equal *percentages* of their business to the price shader, an equivalent rule can be phrased in terms of n_i, the ratio of business done by all members of the group to that done by firm i. Then $E_{ji}=-E_{ii}/(n_i-1)$; for the ratio of E_{ji} to E_{ii} is still just a matter of the relative importance of the price-cutting firm i, regardless of the number and relative sizes of the other firms.

For any given value of E_{ii}, the larger is n (or in the somewhat more general case, n_i), the smaller is E_{ji}. This is undoubtedly what persuades Chamberlin and others in his camp that cross-elasticity is fundamentally a matter of the number of competitors—or of the relative importance of the ith firm in its group. With $E_{ii}=-5$, E_{ji} would be 5 when $n=2$, or 2.5 when $n=3$; but when $n=1001$, E_{ji} would be .005—or very small indeed.

The fact that this cross-elasticity may be indefinitely small under differentiated competition is thus at least somewhat embarrassing for Triffin when he implies that near-zero values of that coefficient indicate an approach to pure monopoly. When E_{ji} is very small with respect to any and all other firms j, all that can be said in general is that the ith firm is either a pure monopolist or in differentiated competition. But these two situations can still be distinguished. Under differentiated competition, although E_{ji} between the ith firm and the many other suppliers of close substitutes may be very small, the cross-elasticities with the remaining firms in the economy must be very much smaller still. Under pure monopoly, by contrast, E_{ji} will be small and of at least roughly comparable magnitude for *all* other firms—without any clear-cut discrepancies that would indicate some alternative products to be very much closer substitutes than others. The distinction between pure

monopoly and differentiated competition, accordingly, is not a matter of "large" *versus* "small" cross-elasticities, nor of "near-zero" values *versus* values "significantly different from zero"; but the desired distinction can be drawn in terms of the characteristics of the whole frequency distribution of all the E_{ji} magnitudes—with i referring to a given firm and j successively to all others.

What Triffin sees and Chamberlin misses, on the other hand, is that E_{ji} is not *necessarily* small under differentiated competition. Assuming again that $n=101$, let us now imagine that the products of those firms become closer and closer substitutes in the eyes of buyers, so that "own" elasticity increases. With $E_{ii}=-5$, E_{ji} was .05; but if $E_{ii}=1000$, E_{ji} becomes 10. Surely this approach to product homogeneity does not imply oligopoly, but rather an approach to pure competition! And no matter how high n may be, E_{ji} can indeed be indefinitely large provided that E_{ii} is all the larger. Clearly, a value of E_{ji} significantly different from zero is not a sufficient condition for oligopoly, although it does remain a necessary one.

It may be objected, of course, that—with n large—E_{ji} becomes really high only as *significant* product differentiation disappears. That is true; but this observation at least disposes of the quite erroneous belief, entertained by almost all of Triffin's critics, that E_{ji} must be zero or nearly so under pure competition. And it also disposes of the somewhat more consistently wrong view held by a sub-set of those critics, that E_{ji} is necessarily small under *both* pure and differentiated competition.[12]

In short, both Triffin and Chamberlin seem to me to have been guilty of a rather interestingly opposite one-sidedness in their interpretation of the significance of the cross-elasticities E_{ji} and E_{ij}. With an odd perversity, Chamberlin says, "Even if we . . . interpret the coefficient as having a value of infinity for pure competition, its value skips discontinuously to zero with the slightest departure in terms of heterogeneity; it can only be made to proceed through a stage of finite values by operating on the scale of numbers."[13] The truth of the matter, of course, is that the value of E_{ji} depends on *both* the scale of numbers and the scale of product homogeneity-heterogeneity; and consequently it is not a sure clue to either, separately.

Triffin, on the other hand, says: "Our coefficient of interdependence measures the relative share of monopoly and competition in the situation of the seller. In the ideal case of pure competition, the coefficient reaches the value of infinity, and monopoly is entirely squeezed out. In the same measure in which our coefficient indicates a loosening of the

[12] In an earlier draft of this paper, I must confess that I represented E_{ji} as infinite under pure competition but necessarily small under differentiated competition.

[13] *Op. cit.*

competitive ties, it also indicates a growing strength of the monopoly element."[14] Even as Chamberlin saw clearly *only* the effect of numbers, Triffin here neglects that scale altogether, at least momentarily; for a decline of cross-elasticity may reflect *either* an increase of product heterogeneity and hence "a loosening of competitive ties" *or* an increase of numbers, which is if anything a strengthening of competition and certainly not "a growing strength of the monopoly element." But this is only temporary back-sliding on Triffin's part; for his use of the quantity cross-elasticity e_{ji} to bring out the distinction between few and many rivals shows that he is certainly aware that his main coefficient E_{ij} does not do the whole job of distinguishing "monopoly" from "competition."[15]

From the number of able authorities who have stumbled on the point, I think we must regard it as a major paradox that a high cross-elasticity is *not* a necessary indication of oligopolistic interdependence. As with all good paradoxes, of course, the contrary proposition has its deceptive plausibility. If a firm cuts its price and that has an appreciable relative percentage effect on the quantity that another firm can sell, is not that exactly what causes the second firm to react in such a way as to imply an oligopolistic relationship between the two firms! The paradox is resolved only by considering E_{ji} in relation to E_{ii}. If E_{ii} is very high—and specifically very much higher than E_{ji}—the ith firm will then have to shade its price only very slightly in order to achieve even an enormous percentage increase in its own quantity sold. Furthermore, provided that the increase in q_i comes in small bits from each of many rivals, the actual change in their individual outputs will still be small—despite the fact that those changes are large, in percentage terms, as compared with the very small initiating percentage change in p_i. In short, it is only when E_{ji} is high *relative* to E_{ii} that oligopoly is likely.

This resolution of the paradox is implicit in the formulas already developed:

$$E_{ji} = -\frac{E_{ii}}{n-1} \quad \text{and} \quad E_{ji} = -\frac{E_{ii}}{n_i - 1}\,.$$

Obviously, the "numbers" implication in the simplest case is readily reflected by the expression $-E_{ii}/E_{ji}=n-1$ (or the number of *other firms* with which the ith firm is in ideally symmetrical competition).[16]

[14] *Op. cit.*, pp. 131–32.

[15] In the quotation given here, in fact, Triffin reverts to precisely Kaldor's early oversimplification, as quoted above, n. 11.

[16] Bain has suggested to me, as a similar test of "numbers," what he calls a "quantity-quantity cross-elasticity," namely $(\partial q_j/\partial q_i) \cdot (q_i/q_j)$. This implies that p_i is changed—with all other prices, including p_j, constant; and the coefficient then amounts to the percentage change in q_j relative to the percentage change in q_i, both having been induced by the same initiating

With all group members not of the same size but with competition still symmetrical in the sense that all other firms j are subject to equal percentage changes of q_j in response to the variation of p_i, the expression $-E_{ii}/E_{ji}=n_i-1$ becomes a "numbers-equivalent" concept—*as if* the ith firm were a member of a symmetrical group of n_i firms of equal size. And finally, even when there is no distinct grouping of firms, but when the ith firm is in thoroughly asymmetrical competition with certain other firms j, the coefficient $-E_{ii}/E_{ji}$ will still represent a "numbers-equivalent" concept of essentially the same kind.

For logical completeness, it should be borne in mind that a market relationship is never the product of *demand* conditions alone, but also depends on the underlying supply or *cost* conditions as well. For example, I have concluded that a sufficiently high E_{ii} takes the oligopolistic curse off a substantial—but still relatively lower—E_{ji}. This is so only to the extent that firm i will not, as a matter of fact, indulge in very substantial changes of p_i. That is to say, although the ith firm may increase its business several fold by slight reductions of p_i, it must not have an inducement to expand output *so much* as to alter greatly its percentage share of the total business done by itself and its significant competitors —and thereby make really substantial encroachments on the volume of those competitors. But whether or not the ith firm will have such an inducement—which amounts to reducing n_i so much as to turn the situation into an oligopolistic one—depends fundamentally on cost conditions. Just as purely competitive equilibrium is impossible with declining average cost, so is differentiated but near-pure competition rendered unstable by anything more than slightly decreasing average cost. Hence the case of a substantial E_{ji} and a still greatly higher E_{ii} necessarily implies an appropriate underlying cost structure. Indeed, it is surprising that we can go as far as we do in characterizing market relationships solely in terms of elasticities and cross-elasticities of *demand*, without explicit mention of cost conditions. It should be realized that this is possible only because the demand elasticities are implicitly symptomatic of the appropriate underlying cost patterns.[17]

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change in p_i. This is nothing but the negative reciprocal of my own expression—since, in the simplest case,

$$\frac{E_{ji}}{E_{ii}} = \frac{\partial q_j}{\partial p_i}\cdot\frac{p_i}{q_j}\Big/\frac{\partial q_i}{\partial p_i}\cdot\frac{p_i}{q_i} = \frac{\partial q_j}{\partial q_i}\cdot\frac{q_i}{q_j} = -\frac{1}{n-1}.$$

I happen to prefer my own expression, but only because it is somewhat more directly related to the "numbers" concept and because Bain's coefficient is a rather strange combination of two dependent variables without the independent variable.

[17] Fundamental as costs are from a causal point of view, however, I think it is neither necessary nor fruitful to try to bring them into the elasticity-and-cross-elasticity classification of market situations in any more explicit way. I have reached this conclusion only after con-

V. *The Limiting Case of Perfectly Homogeneous Products*

Although it has already been shown that the elasticity E_{ji} *approaches* infinity as the products supplied by various rivals *approach* homogeneity,[18] some special problems are encountered at that limit, when the products are literally perfect substitutes. No one has registered any clear dissent to the proposition that E_{ji} is literally infinite when perfectly homogeneous products are supplied by only a few sellers. An impressive majority of critics, however, have stoutly maintained that the cross-elasticities are zero (or nearly so) when the sellers of homogeneous products are numerous enough for pure competition.

At the bottom of this belief is again the erroneous preconception that a high cross-elasticity inevitably implies oligopoly; and naturally an *infinite* cross-elasticity would then appear to be the ultimate in that kind of interdependence. As Chamberlin puts it, "the coefficient . . . also has a value of zero under *homogeneous* competition with large numbers, since it is a familiar aspect of pure competition that no one seller can have any substantial effect upon the sales of any other."[19] Or in Papandreou's words: "Yet it should be obvious that, under conditions of pure competition, it is impossible for firm j to affect the *actual* volume of firm i's sales. If it could do so, . . . the relationship would indeed be circular rather than atomistic, which contradicts our assumption that the situation is purely competitive. In a purely competitive situation, the cross-elasticity of demand for the product of firm i becomes zero, *in terms of actual or realizable changes in the volume of firm* i*'s sales.*"[20]

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sidering Papandreou's interesting but—it seems to me—abortive attempt to do so. Papandreou coins a "coefficient of penetration," which he defines as E_{ij} times K_j, the latter being represented as "an index of the capacity of firm j to match with supply units the demand units which stand ready to shift to it following its price change" (*op. cit.*, pp. 890–91). Papandreou concedes, however, not only that K_j is "most awkward," but that it depends on E_{jj} and the elasticity of j's output with respect to its total-cost outlay (*i.e.*, the elasticity of its total-cost curve) in a way about which "we do not know much" except that "K is an increasing function of the elasticity of the output-outlay function and a decreasing function of the elasticity of demand." Since E_{jj} may approach (and reach) minus infinity, and since the output-outlay elasticity may be anything between zero and plus infinity, it is hard to see how K_j is limited to the values "between zero and unity, including both," as the author states; but then he never specifies how K_j depends on these two elasticities in the first place. Even apart from the difficulty of making anything at all out of so vague a notion, it seems to me that the output-outlay elasticity has nothing to add to such elasticities as E_{ij} and E_{jj} in the classification of market relationships. Except that in pure competition the average-cost elasticity cannot be negative—and hence the total-cost elasticity cannot be greater than one—there are no distinctive correlations of any mere cost elasticity with any of the various alternative market situations.

[18] *Supra*, p. 787.

[19] *Op. cit.*

[20] *Op. cit.*, p. 889, original italics.

The positive argument that pure competition implies zero (or near-zero) E_{ji} and E_{ij} runs as follows: (1) when a pure competitor shades the price in order to sell somewhat more, he is unable to accommodate a vast increase of business because of the cost and supply conditions that are necessary for stable pure competition in the first place; (2) hence, even though the quantity sold by the price-shader increases by a substantial percentage, the reduction in quantity sold by any one of the many other competitors is negligible; and (3) the cross-elasticity between any two pure competitors is accordingly zero, or at least very small.

The first objection to this reasoning is that proposition (3) is a complete *non sequitur* with respect to the eminently acceptable propositions (1) and (2). The fallacy involves an illogical handling of a "negligible" change of q_j relative to the even more negligible initiating change of p_i. When firm i and its many competing suppliers of perfectly homogeneous products are all producing positive outputs at the same price, E_{ii} is literally negative infinite; for a substantial finite increase or decrease of q_i can be induced by an infinitesimal or *indefinitely small* decrease or increase, respectively, of p_i—with all other prices constant.[21] Now this implies that at least *some* competing outputs q_j will change by finite amounts; and, even though the finite change in q_j is "negligible" in both absolute and percentage terms, and specifically very much smaller than the opposite change in q_i, it is still indefinitely large *relative* to the *infinitesimal* initiating change of p_i. In this sense, E_{ji} is thus literally infinite (for at least some competitors), as a necessary implication of the infinite E_{ii}.

As with the merely high finite values of E_{ji} under differentiated but near-pure competition, there is no oligopolistic implication in this result. The purely competitive firm is essentially a quantity-decider rather than a price-quoter. Hence the extreme interdependence as to price that is implied by the infinite cross-elasticities has no oligopolistic consequences, in the light of the fact that the purely competitive firm has no *significant* price decision in the first place. Such a firm can increase its output several fold with only the slightest shading of price. It thus has—not zero—but very slight effects on the outputs of its rivals; but, as long as cost conditions are indeed such that the price-shader will not make more than trivial inroads on the outputs of the other individual firms, that is enough to avoid the oligopolistic difficulty. While appropriate underlying cost conditions are thus unquestionably essential for

[21] E_{ii} is also *literally* infinite, of course, when there are only *few* (but at least two) producers of perfectly substitute products, because of the assumed constancy of other prices. Only with respect to different definitions of demand is "own" elasticity only "approximately infinite" under pure competition and significantly different from infinity under pure oligopoly.

stable purely competitive equilibrium, they do not contradict nor modify the *demand* relationship that is implied by the infinite cross-elasticities.

This observation leads to the second—and methodologically more fundamental—criticism of the practice of invoking supply restrictions to modify the definitions of elasticity and cross-elasticity of demand. I take it that no one would explicitly argue that the demand curve ought not even to be defined for quantities in excess of maximum supply quantities; yet this is precisely what is implied by those writers who argue that purely competitive cross-elasticities are zero because of the unwillingness of the individual firm to supply more than certain limited quantities. After all, a demand schedule shows what customers *would be willing to buy* at various prices, quite independently of that other datum, the supply curve, which shows what suppliers are willing to sell. From the point of view of the firm, demand shows what it *could* sell, not what it will actually be willing to sell; and elasticities and cross-elasticities of demand are properties of such demand functions, as specified for outputs above and below the output that the firm actually decides upon in the additional light of its costs. Yet these elementary definitions are ignored by those writers who measure cross-elasticity, following an assumed price cut, not in terms of customers' willingness to buy, but in terms of the firm's willingness to *sell*.

If the demand curve is irrelevant for quantities in excess of the maximum supply quantities, the monstrosity that results is a demand curve above the supply-demand intersection and a supply curve below that point. The half-breed supply-demand elasticities and cross-elasticities are then indeterminate when supply equals demand; and, with a positively sloping supply curve, they would actually have reversed signs for prices below the supply-demand intersection, thereby turning competitive firms into complementary ones! Obviously no one will wish to acknowledge so peculiar a conception as his own, once its implications are spelled out; but the only alternative is to return to the standard formulation of demand elasticities and cross-elasticities in terms of what customers are *willing* to buy at various prices, *regardless of the willingness or ability of firms to supply that demand.*[22]

[22] Let me illustrate the widespread practice that I am criticizing—that of modifying especially the definition of cross-elasticity of demand in the light of supply or marginal-cost conditions. Chamberlin says, "the coefficient may be interpreted as having a value of infinity under pure competition only if the rising marginal cost curves of the individual sellers, which are essential to pure competition, are ignored . . . " (*op. cit.*). Papandreou conveys essentially the same sentiment in his italicized emphasis on "actual or realizable changes" in the volume of one firm's sales as the result of a change of another firm's price (in the quotation already given above, p. 790). And Morgan, speaking of the effect on *i*'s revenue of a price cut by firm *j*, specifically with reference to its "rising marginal costs with larger output," says: "All that will happen is that some few buyers on the market reap a windfall advantage in consequence

So far I have concurred in Triffin's conclusion that the cross-elasticities are infinite whenever two or more firms are producing perfectly homogeneous products. While I think that this conclusion is essentially unobjectionable, there is a subtle logical difficulty that should at least be mentioned. It is related to the fact that, when two or more *perfect* substitutes are offered at the same price, the demand for any one of them is technically indeterminate, even though the total demand for the group of substitutes as a whole is determinate. By convention, we define E_{ii} and E_{ji} with respect to whatever initial quantities we happen to observe being produced and sold by the several firms. There is then no ambiguity about E_{ii}: it is uniquely and literally negative infinite because finite increases or decreases of q_i are induced by infinitesimal decreases or increases, respectively, of p_i.[23] With only *two* producers, moreover, there is no ambiguity about E_{ji} either: it is uniquely and literally positive infinite because any increase or decrease of q_i is exactly matched by a decrease or increase, respectively, of q_j. But with *three or more* rival suppliers, although the change of q_i exactly matches the opposite change in the *sum* of the outputs of the other producers, there is again an indeterminacy as to the effect on the demand for the output of any *one* of them.[24]

As I have stated it above, in the context of a change of p_i in a purely competitive industry, the outputs sold by at least *some* other firms j must be affected to a finite extent and oppositely to the change of q_i; and in this sense at least *some* of the coefficients E_{ji} must be infinite. From a purely rigorous point of view, however, it should be conceded that the effect on any particular q_j is uncertain; and hence any particular E_{ji} is technically indeterminate. There is no such difficulty as long as perfect substitutability among products is merely being *approached;* and this problem of indeterminacy *at* a limit is one that frequently arises. Hence its importance should not be exaggerated. Nor do these

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of j's philanthropy" (*op. cit.*, p. 462, n.). It strikes me as peculiarly perverse to measure E_{ij} in terms of a purely philanthropic price cut, when the price-cutter is actually willing to sell *less* output after the price cut than before; but that does indeed seem to be the unavoidable consequence of letting supply limitations intrude upon the definition of demand concepts.

[23] This implies that q_i and at least one other homogeneous output are positive. If q_i is zero, E_{ii} is indeterminate for a price increase (zero over zero); and if q_i is a maximum (with all other homogeneous outputs zero), E_{ii} is finite for a price *decrease*. These exceptions can be ignored on the grounds that we are concerned only with cases of two or more *positive* outputs of the perfect substitutes.

[24] Especially is this so for an *increase* of p_i; for then, even though q_i goes to zero, the reallocation of that quantity as an addition to the quantities demanded of the two or more other individual firms is indeterminate. For an infinitesimal *decrease* of p_i, the same indeterminacy is present only if the increase of q_i stops somewhere short of repressing all other outputs to zero; but, literally in terms of what customers are *willing to buy*, the other quantities demanded do indeed fall off to zero, and E_{ji} is again determinately infinite.

observations concede anything to the view that E_{ji} is uniquely small under pure competition. But with three or more rival suppliers of literally perfect substitutes, the conclusion that E_{ji} is—if anything—infinite does call for at least the mental reservation that it may be, to a sensitive logician, merely indeterminate.

VI. *The Significance of "Quantity" Elasticity and Cross-Elasticity*

Chamberlin's attempt to classify market situations simply in terms of the "price" elasticities and cross-elasticities, E_{ii} and E_{ji}, has been shown to be unsuccessful. For one thing, these coefficients are both infinite in both pure competition and pure oligopoly. For another, E_{ji} *may* be high in differentiated competition as well as in differentiated oligopoly. On the other hand, the latter pair of market relationships *can* be distinguished in terms of the *relative* values of E_{ii} and E_{ji}, high values of $-E_{ii}/E_{ji}$ signifying large numbers of rivals and small values signifying few rivals; but even this technique fails when E_{ii} and E_{ji} are both infinite (or worse, indeterminate), as they are when literally perfect substitutes are produced by either few or many rival firms. In other words, Triffin is entirely correct in his interpretation that E_{ji} is *not* a reliable index of the presence or absence of oligopoly; and it was this that prompted his interest in the "quantity" cross-elasticity, e_{ji}.

The coefficient e_{ii} is small only in pure or near-pure competition. It may be significantly different from zero, on the other hand, for either or both of two standard reasons: (1) because the ith product is significantly differentiated from all others, or (2) because the ith firm produces a significant fraction of the total output of perfect or relatively close substitutes. The first reason applies alone in pure monopoly and *significantly* differentiated competition; the second applies alone in pure oligopoly; and both reasons apply together in differentiated oligopoly. Because e_{ii} thus merely sets pure (and nearly pure) competition apart from all other market situations, it is of relatively little use in general market classification. For the same reason, however, when it is said that *only* in pure competition does the firm face a (nearly) horizontal demand, one way of defining that demand is in these terms of "all other quantities constant"—with the implication in pure competition, then, that e_{ii} is near-zero and its reciprocal (*i.e.*, the customary form of elasticity, with quantity change relative to price change) near-infinite.[25]

The "quantity" cross-elasticity e_{ji} is equal to e_{ii} when the ith and jth products belong to a group of literally homogeneous products; for then a change of q_i will have the same effect on p_j as on p_i. When the ith product is differentiated from its rivals, on the other hand, the effect on p_j will be less than that on p_i; so e_{ji} will be numerically smaller than

[25] This way of formulating demand for the product of the individual firm is, of course, Cournot's.

e_{ii}. It is for this reason that e_{ji} is represented as small in both pure and differentiated competition—and of course in pure monopoly as well. It is small in pure and nearly pure competition because e_{ii} is small; and in significantly differentiated competition (as well as pure monopoly), when e_{ii} does differ significantly from zero, the same product differentiation that is responsible for this also guarantees that e_{ji} will be small relative to e_{ii}. Finally, if e_{ji} is small in both pure and differentiated competition and in pure monopoly, but significantly different from zero under either form of oligopoly, this coefficient appears to be the needed key to the presence or absence of the oligopolistic relationship.

So far I have presented a rather extended justification of Triffin's interpretation and use of e_{ji}. Now, unfortunately, I must show that it is not altogether rigorous; for e_{ji} *may* be relatively high and even infinite when the conditions for pure competition are otherwise fulfilled. This appears from a closer analysis of the exact determinants of e_{ii}—and hence e_{ji}—in the cases of two or more suppliers of perfect substitutes.

Suppose, first, that there are n firms all producing equal quantities of a homogeneous product. Let the total industry output be Q and the price P. With respect to the ith firm's output, $Q=nq_i$; and, of course, $P=p_i$. Then, since all quantities except q_i are constant, $\partial p_i/\partial q_i=\partial P/\partial Q$. Accordingly, the "quantity" elasticity of industry demand is n times the "quantity" elasticity of demand as seen by the ith firm: $(\partial P/\partial Q)\cdot(Q/P)=(\partial p_i/\partial q_i)\cdot(nq_i/p_i)=ne_{ii}$. Alternatively, even if the n firms are not all of the same size, but with the total industry output n_i times that of the ith firm, $Q=n_iq_i$ and $(\partial P/\partial Q)\cdot(Q/P)=n_ie_{ii}$.

The coefficients e_{ii} and e_{ji} are thus seen to be equal to the fraction $1/n_i$ of the "quantity" elasticity of industry demand.[26] With n_i small, of course, e_{ii} and e_{ji} will represent relatively substantial fractions of industry elasticity; and as n_i increases, the coefficients relating to the ith firm will accordingly decrease. That, in fact, explains why e_{ii} and e_{ji} are expected to be small when there are many firms—or, more specifically, when the ith firm's fraction of total industry output is very small. But e_{ii} and e_{ji} will actually be small, even with large n_i, only *provided* that the industry "quantity" elasticity is not itself unusually large—that is, provided industry demand is not vertical or nearly so. Any use that we make of e_{ji} as a device for distinguishing the presence or absence of oligopoly must thus be subject to this kind of qualification.

A perfectly or nearly vertical industry demand may seem rare enough so that we need not worry too much about this qualification. Actually, however, the *ceteris paribus* assumption as to other quantities increases

[26] In the more conventional form of elasticity, with percentage quantity change relative to percentage price change but still with other *quantities* assumed constant, elasticity as seen by the firm will be n_i *times* the industry elasticity.

the danger of such a phenomenon, even when it would not occur in the context of the alternative usual assumption of other prices constant. Suppose, for example, that the commodity to whose total output the ith firm contributes is *perfectly complementary* with one or more other commodities, each produced by one, few, or many firms—such that the total demands for the various complements are always in absolutely fixed proportion to one another, regardless of their relative prices. Then if the appropriate relative quantities of the complementary commodities are specified as independent variables in the demand-price functions of Section III, Part B, the demand prices of the separate commodities are indeterminate.[27] This implies, of course, a vertical demand—up to the determinate sum of the demand prices for all the complements. With respect to positive initial prices for two or more of the complementary commodities, e_{ii} is then negative infinite; for an infinitesimal reduction of quantity, even by one small supplier, would increase p_i to the top of its indeterminate range (all other quantities being specified as rigidly fixed), and a small increase of q_i would make p_i determinately zero. Similarly, e_{ji} between *competing* suppliers is also negative infinite; and e_{ji} between *complementary* suppliers is positive infinite—at least to the extent that the smallest reduction of q_i would reduce p_j to zero.

What would such a vertical industry demand imply as to the stability of pure competition—when supply is appropriately adjusted to that demand? From a strict interpretation of the conventional model of instantaneous market equilibrium—when all supply quantities are regarded actually as literally fixed—there is, of course, no determinate equilibrium; for a vertical supply would then simply coincide with the vertical demand over a substantial range. Moreover, the conditions for pure competition would be inherently violated; for despite the large numbers of buyers and sellers of the perfectly homogeneous commodity, any one small buyer or seller could have a substantial influence on the price with the slightest curtailment of his purchases or sales, respectively. In this sense, high or infinite values of e_{ii} and e_{ji} are indeed a sign of oligopolistic interdependence, regardless of the large numbers of buyers and sellers of the homogeneous product.

This result, I think, is not to be taken seriously; for the influence over price vanishes as soon as we replace the overly literal assumption of vertical supply with a supply curve of positive slope. That type of supply is justified not only in Marshallian short-period equilibrium, when some

[27] That is, there is a determinate demand price for a composite unit of the perfect complements, but no determinate price for any one of the component commodities separately. This indeterminacy of the demand *prices* of perfect *complements* is closely analogous to the indeterminacy of demand *quantities* of perfect *substitutes* in the demand-quantity functions of Section III, Part A.

variation of production becomes possible, but also in the instantaneous market equilibrium as well—when even a small dose of "corrective" speculation on the part of either consumers, producers, or third parties will serve to stabilize price in the vicinity of its short-period equilibrium.

Supply conditions are thus again seen to play an essential rôle in the stability of pure competition. The coefficients e_{ii} and e_{ji}—defined as they are, in terms of other quantities constant—may give an altogether misleading impression of the individual firm's control over price; for, even when the firm *could* influence price significantly *if* all other quantities were actually constant, the variability of supply is almost sure to cancel that result.[28] The practical significance of these weird cases of vertical demand should not be exaggerated; but, even so, they are significant exceptions to any *general* reliability of the "quantity" coefficients e_{ii} and e_{ji} as indexes of market relationships.

VII. *Market Classification Reconsidered*

After all this constructive and destructive criticism of the various elasticities and cross-elasticities as characteristics of different market situations, can any one classificatory scheme be recommended as best? I fear I must conclude that no plan emerges that is at once simple and fool-proof.

Triffin's classification in terms of E_{ij} and e_{ji} is marred, both because of the overlap of differentiated competition and pure monopoly in the range of very small values of E_{ij}, and because of the imperfect reliability of e_{ji} as a test of oligopoly. And Chamberlin's use of E_{ii} and E_{ji} breaks down completely because large values of E_{ji} do not necessarily imply oligopolistic interdependence.

Market classification depends primarily on two basic considerations: (1) the degree of substitutability of products, and (2) the independence *versus* the interdependence of the business decisions of *pairs* of firms.

The first of these determinants, in my opinion, is better conveyed by E_{ii} than by E_{ji}. Triffin preferred the latter, because of his belief that as E_{ji} falls from infinity to zero, this represents a progression from "more competition to less" and from "less monopoly to more." This is

[28] In other words, in the purely competitive case the Cournot conception of demand facing the individual firm (with other supply quantities constant) is inferior to a *mutatis mutandis* conception that allows other quantities to be adjusted to any new price. Demand as seen by the firm is then the excess of industry demand over the aggregate supply of all *other* suppliers; and the Cournot demand is a special case of this when all other supply quantities are assumed to be fixed. On the other hand, this redefinition is *not* acceptable for the general purposes of market classification, because it implies a "passive" adaptation to price that is decidedly unrealistic when there are only few suppliers. For example, regardless of the slope of industry demand, a horizontal industry supply would make this *mutatis mutandis* demand facing the individual firm also literally horizontal; yet that result would be quite inapplicable if there were very few firms.

only true, however, as a given number of products become more and more heterogeneous—or less and less substitutable; it is false as differentiated products with given substitutability are produced by larger and larger numbers of firms.[29] In other words, E_{ji} depends on *both* product homogeneity-heterogeneity *and* the numbers of rival products; so it is an unsatisfactory indicator of either alone. Furthermore, the former element is very well reflected by E_{ii}, which is an index of the "total substitutability" between the ith product and all others in the aggregate. When E_{ii} is infinite, perfect substitutes for the ith product are supplied by one or more other firms; and as E_{ii} declines, this accurately reflects the decreased willingness of customers to substitute between that product and any and all others.[30]

The second determinant of a firm's market position, involving the likelihood of an oligopolistic relationship with one or more other firms, may be conveyed in either of two ways, neither of which is perfectly general. I am inclined to prefer the coefficient, $-E_{ii}/E_{ji}$. This is equal to the number $(n-1)$ of other producers when there are perfectly symmetrical relationships among a well-defined group of n rivals of equal size; and otherwise it is a "numbers equivalent"—with changes of p_i affecting q_j *as if* the firms i and j belonged to a symmetrical group of the indicated size. This coefficient seems very reliable when products are imperfect substitutes; but unfortunately it breaks down in the case of literally homogeneous products, when E_{ii} is literally infinite and E_{ji} is either infinite or indeterminate.[31] This is less disturbing than it might

[29] My own demonstration of this in Section IV rested on the simplifying but artificial assumption that E_{ii} remained constant as the numbers of firms increased. Realistically, as additional suppliers of a certain genus of differentiated products appear, E_{ii} may more plausibly be expected to increase—as the availability of additional varieties of products makes at least some customers more disposed to switch from one species of product to another in response to a change of any given price. But for similar reasons, E_{ji} may still be expected to fall—since, in response to an increase of p_i, for example, some of the ith firm's customers who would formerly have switched to the ith product will now switch instead to one of the newly available alternatives.

[30] As an argument against the view that an infinite E_{ii} signifies the existence of perfect substitutes, Triffin conjures the admittedly weird, but theoretically challenging, case of an altogether distinctive product that will be bought in large quantity at a certain price but not at all at any higher price—perhaps "owing to traditionalism or stubbornness on the part of buyers" (*op. cit.*, p. 137). Actually, however, the infinite E_{ii} inevitably implies that E_{ji} will also be infinite between the peculiar product i and any other product j to which customers transfer any finite part of their expenditure in response to an infinitesimal increase of p_i; so the relationship between firms i and j is, in that sense, one of "homogeneous competition" by Triffin's criterion, contrary to his allegation that the ith firm is a pure monopolist. Since the ith firm's situation is indistinguishable from that of a pure competitor, at least with respect to a price increase—and, indeed, since the ith product is perfectly substitutable, at least locally, for certain other products—I feel that the case is readily assimilated into the purely competitive category. If the maximum demand for the product is being supplied at the critical price, however, it is also true that the ith firm is indeed a pure monopolist for price decreases.

[31] Bain's closely related "quantity-quantity cross-elasticity" (see above, n. 16) also breaks down when products are perfect substitutes—to the extent that the effect on q_j of an infinitesimal change of p_i is indeterminate.

be, however, since the distinction between pure oligopoly and pure competition is readily drawn simply in terms of the numbers and relative sizes of the rival suppliers; it is only with *imperfect* substitutes (and especially when there are not sharply defined groups of rivals) that E_{ii} and E_{ji} are clearly more sensitive measures of market relationships than the older-fashioned number-and-size criteria.

The alternative clue to the presence or absence of oligopoly is Triffin's e_{ji}. This has the advantage of applying equally well with both homogeneous and differentiated products—if it applies at all. But if industry demand is vertical or nearly so, e_{ji} is misleadingly high for the large-number cases of either pure or near-pure competition. Thus if 100 firms of equal size are producing a homogeneous commodity, for which the "quantity" elasticity of industry demand is -50, e_{ji} will be $-.5$; yet, by this test, this situation would seem "more" oligopolistic than if only two firms were producing such a product with an industry-demand elasticity of $-.5$ and e_{ji} values of $-.25$. Hence I prefer not to use e_{ji} as an indicator of the presence or absence of oligopoly.

I can now summarize my own recommended classification as follows, with $E_{ii}=[(\partial q_i/\partial p_i)\cdot(p_i/q_i)]_p$ and $E_{ji}=[(\partial q_j/\partial p_i)\cdot(p_i/q_j)]_p$:

Numbers or "Numbers Equivalent" of Other Suppliers \ Nature of the Product	Near-Homogeneous $-E_{ii}\rightarrow\infty$	Significantly Differentiated $-E_{ii}<\infty$ (significantly)
$-\dfrac{E_{ii}}{E_{ji}}$ large	Near-Pure Competition	Significantly Differentiated Competition or Pure Monopoly
$-\dfrac{E_{ii}}{E_{ji}}$ small	Near-Pure Oligopoly	Significantly Differentiated Oligopoly

The tabulated classification is thus based on: (1) the relative degree of product heterogeneity—but with the limiting case of perfect homogeneity not represented; and (2) the independence *versus* interdependence of the price-output decisions of *pairs* of rival firms—as reflected specifically in the criterion of numbers or "numbers equivalent." The cases of strictly homogeneous products must then be separated into pure competition and pure oligopoly by a direct measurement of the ith firm's share of industry output.

Differentiated competition and pure monopoly also remain to be separated. As suggested earlier, this cannot be done merely in terms of "large" or "small" values of E_{ji}, but only in terms of the characteristics of the whole frequency distribution of that cross-elasticity, as it involves the ith firm and, successively, all other firms. In order to maintain maximum consistency with the table, the same separation can also be

performed in terms of $-E_{ii}/E_{ji}$. This coefficient will then be high between differentiated competitors i and j, but very much higher yet with respect to all other firms supplying products that are not significantly substitutable with that of the ith firm. For a pure monopolist, by contrast, $-E_{ii}/E_{ji}$ must be more or less *uniformly* high with respect to all other firms, without exception.[32]

So far I have said nothing about those other important determinants of market relationships and results, the phenomena of entry and potential competition. Entry, I feel, cannot be handled in an altogether satisfactory manner in terms of elasticities and cross-elasticities. This is so because no firm is typically willing to start producing, because of cost considerations, unless it is feasible to produce at least some finite minimum output. Hence there is an inevitable discontinuity in the cross-elasticity E_{ji} between an actual firm i and a potential entrant j, and a similar horizontal discontinuity in the demand for q_i as a function of p_i, at the critical price where entry would occur. An act of entry, moreover, may be a peculiarly unique historical event—so that, in advance of the fact, the entry of a jth rival is subject to inherent uncertainty from the point of view of an existing ith firm, being merely a probability function of p_i rather than a certain one. Both because of this uncertainty surrounding the threat of entry and because entry depends so vitally on costs and other considerations in addition to demand, it is probably undesirable to try to squeeze the whole question into the framework of demand elasticity and cross-elasticity.

Some comments concerning entry are called for, however. While entry is usually relatively easy under pure and differentiated competition, it is not an essential feature of those market situations; for even the most arbitrary of restraints—for example, limited licensing—would not alter the basic market characteristics in terms of which those competitive situations are defined. With or without entry, moreover, the price-output decision-making process is essentially the same under both pure and differentiated competition, in the sense that no individual firm will take

[32] E_{ji} may then be uniformly negative as well as positive, but numerically very low in any case. As Triffin has pointed out (*op. cit.*, p. 132), if a consumer good has unit-elastic demand, E_{ji} may be literally zero with respect to any and all other goods: as p_i changes, expenditure on that good remains exactly constant; and if there is also no change in any q_j, the conditions for pure monopoly are exactly fulfilled. This would imply, incidentally, that consumer tastes are consistent with an Edgeworth-Pareto assumption that the marginal utility of the ith good is independent of the quantities consumed of all other goods. With a similar assumption as to consumer tastes, but with demand for the ith good (a) relatively elastic or (b) relatively inelastic, all cross-elasticities E_{ji} would very likely be of at least roughly uniform smallness and (a) all positive or (b) all negative. (By wholly static criteria, of course, a pure monopolist would never maximize profit within the range of relatively inelastic demand; but on other, more realistic grounds, he might well choose to operate in that range.) All of these cases would be very acceptable examples of pure monopoly; and other, less clear-cut cases would also qualify in that category.

account of any threat of entry—any more than it will take account of any possible reactions by any of its existing rivals. The threat of potential competition as an element entering into the decision-making of the individual firm, in other words, is essentially an oligopolistic phenomenon; and it is merely one more reason why any *ceteris paribus* demand is an inadequate representation of the demand that is relevant for an oligopolist's business decisions. Similarly, any significant threat of potential competition represents a serious qualification on the "purity" of an otherwise "pure monopoly"; for a "monopolist" who does have to worry about the possible entry of one or more suppliers of either perfect or relatively close substitutes is really in an oligopolistic situation. From one point of view, it might be said that pure monopoly, *by definition*, requires no threat of entry; but any such specification that the appearance of even relatively close substitutes is ruled out would merely succeed in making that category even less important, empirically, than it already is.[33]

The above table is limited to the relationship of *substitutability* among various products; but it can also be expanded to include *complementary* relationships as well. Complementarity implies that E_{ji} is negative, and hence that E_{ii}/E_{ji} is positive. If that coefficient is then positive and *small*, this implies that a change of p_i sufficient to have a substantial effect on q_i will also have a substantial sympathetic effect on q_j—q_i and q_j both being increased as p_i is lowered, and decreased when p_i is raised. Because the percentage effect on q_j is substantial, relative to the percentage change in q_i, a relationship of "complementary oligopoly" is thereby established; and this implies the possibility of explicit or tacit collusion "in furtherance of trade"—since a recognition of mutual interdependence between *complementary* suppliers will result in *lower* prices and *higher* outputs than would otherwise prevail. Finally, however, if E_{ii}/E_{ji} is positive and large, the complementarity that is present will be

[33] On the other hand, the fact than an otherwise "pure" monopolist does typically have at least some long-run concern for the effect of his price-output policies on the entry of potential competitors persuades me all the more that "monopoly" is a significant theoretical category, distinct from differentiated competition—since the irrelevance of entry considerations to the individual firm is implicit in the definition of that latter category. Chamberlin to the contrary, pure monopoly seems to me to be "unreal," not because it is indistinguishable from any other "isolated selling" of differentiated products, but because it is likely to be "imperfectly isolated selling," *i.e.*, oligopolistic—in the sense that there is almost always likely to be at least some threat of potential competition.

The concept of pure monopoly naturally is all the more significant when potential competition can be neglected. One frequently hears the dictum that the competition of a pure monopolist with all other "rivals for the consumer's dollar" differs only in degree from competition among the members of a large-number group. This seems to me more misleading than helpful; for it tends to obscure the important contrast between no effective competition and a vigorous competition fulfilling many, if not all, of its traditional functions. For Chamberlin's latest expression of his contrary view, see his "Monopolistic Competition Revisited," *Economica* (new series) Nov., 1951, XVIII, 352–53.

negligible as far as the interdependence between the mere *pair* of firms i and j is concerned.[34]

VIII. *Asymmetrical Market Relationships*

So far, I have discussed the market situation of the ith firm in an essentially one-sided way—in terms of the effects of *that firm's* changes of price or quantity on its own, or some other firm's, quantity or price, respectively. As I have said, I prefer this to Triffin's procedure, which is a "circular" testing of the effects of changes in the jth price on the ith quantity and of changes in the ith quantity on the jth price—and I shall indicate the basis for my own preference below. But the main point is that both of these approaches are incomplete; for the relationships *between* the ith and jth firms cannot be fully characterized except from *both* their points of view.

Let us suppose that imperfect but relatively close substitutes are produced by a well-defined group of firms, with the ith firm producing 50 per cent of the industry output and with 100 other firms—including the jth—producing .5 per cent each. Suppose furthermore, for convenience, that the relationships among these 101 firms is otherwise symmetrical, such that all have the same "own" elasticity, E_{ii} or E_{jj}, equal to -5 and that a change of price by any firm—the ith or the jth —will have equal *percentage* effects on the outputs of the remaining firms. As my "numbers equivalent" concept implies, the situation is *as if* the ith firm were in an industry with *one* other rival of the same size ($n_i=2$ and $n_i-1=1$); and it is *as if* the jth firm were in an industry with 199 equally small rivals ($n_j=200$ and $n_j-1=199$). Since both E_{ii} and E_{jj} are -5, E_{ji} is 5, but E_{ij} is only a shade more than .025—in the light of the formulas $E_{ji}=-E_{ii}/(n_i-1)$ and $E_{ij}=-E_{jj}/(n_j-1)$. Furthermore, since $-E_{ii}/E_{ji}=1$, the ith firm appears to be a differentiated oligopolist; but, since $-E_{jj}/E_{ij}=199$, the jth firm has every appearance of being merely a differentiated competitor. For similar reasons, e_{ji} is presumably large—since a given change of the larger firm's output will have a significant relative effect on p_j; and specifically it is much larger than e_{ij}—since a comparable percentage change of q_j will have only a relatively small effect on p_i or the price of any other firm in the group.

Now Triffin's tests (E_{ij} and e_{ji} from the ith firm's point of view, and E_{ji} and e_{ij} from the jth's) give quite misleading results in this case. They would indicate that neither firm has a "circular" relationship with the other—firm i's independence being implied by the small E_{ij},

[34] If these complementary cases were to be added to the table, this would take the form of two additional rows; but there would be no significant further distinction to be made depending on the relative magnitude of E_{ii} alone.

and firm j's by the small e_{ij}. The flaw in this, it seems to me, is that the large ith firm may well be in an oligopolistic position. It is certainly so to the extent that its price decisions have significant repercussions on all the other firms in the group; and, even though it might regard the reactions of any *one* of those other firms as negligible, it is bound to take account of the reactions of all those firms together. My own oligopolistic test conveys this kind of interdependence, since $-E_{ii}/E_{ji}$ is small.

On the other hand, it obviously does make a difference to the producer of 50 per cent of the total output of the group whether the remaining 50 per cent is produced by one or 200 other producers; and this is reflected, of course, in the large values of $-E_{jj}/E_{ij}$. With only one other producer, explicit or tacit collusion is obviously easier than with 200 rivals. Yet it is also possible even in the latter case. Precisely because firm i is likely to be vulnerable to the sum of the flea bites of j and all other such firms together, it may well have both the motive and the will to develop a microscopic interest in the small firms and a policing attitude toward them. Hence a disciplinary attitude on the part of the ith firm toward the price-cutting proclivities of the small firms might succeed in conditioning those firms to recognize an interdependence between their otherwise negligible acts of aggression and i's retaliatory discipline. This is not a consistently necessary result, however; for, even if the big firm tries this, it may never succeed in persuading the smaller competitors that their situation is anything other than the merely differentiated competition that it appears to be in terms of their elasticities and cross-elasticities.

I can only conclude that asymmetrical market relationships have to be evaluated with caution; for there may or may not be collusive implications when firms that appear to be differentiated oligopolists are in the same group with others that have all the superficial appearances of being merely differentiated competitors. The same observation would also hold for similar asymmetries among rival suppliers of homogeneous products. As a corollary, inter-firm relationships can be regarded as definite from the present classificatory point of view only if those relationships are at least roughly symmetrical.

BIOLOGICAL ANALOGIES IN THE THEORY OF THE FIRM[1]

By Edith Tilton Penrose*

Economics has always drawn heavily on the natural sciences for analogies designed to help in the understanding of economic phenomena. Biological analogies in particular have been widely used in discussions of the firm. Probably the best known and most common of these analogies is that of the *life cycle*, in which the appearance, growth and disappearance of firms is likened to the processes of birth, growth, and death of biological organisms. Marshall's reference to the rise and fall of the trees in the forest is an oft-quoted example of this type of analogy. Recently, two additional biological analogies have been presented —a natural selection analogy, dubbed by one writer *viability analysis*, and the *homeostasis* analogy designed to explain some aspects of the behavior of firms. The former, like the life cycle analogy, is for use in long-run analysis only. The latter is exclusively for short-run analysis. Both are supposed to represent improvements on the existing theory of the firm at the core of which lies the chief target of attack—the assumption that firms attempt to maximize profits.

The purpose of this paper is to examine critically all three types of reasoning and to show that they lead in most cases to a serious neglect of important aspects of the problem that do not fit the particular type of analogical reasoning employed. The chief danger of carrying sweeping analogies very far is that the problems they are designed to illuminate become framed in such a special way that significant matters are frequently inadvertently obscured. Biological analogies contribute little either to the theory of price or to the theory of growth and development of firms and in general tend to confuse the nature of the important issues.

The "Life Cycle" Theory of the Firm

Implicit in the notion that firms have a "life cycle" analogous to that of living organisms is the idea that there are "laws" governing the de-

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[1] This paper is a by-product of my work on the theory of the growth of the firm in connection with a project on firm growth directed by G. H. Evans, Jr., and Fritz Machlup, and financed by the Merrill Foundation for the Advancement of Financial Knowledge. I am particularly indebted to Professor Machlup for his careful criticism of the manuscript and for many valuable suggestions, and to Professor Bentley Glass for safeguarding my ventures into biology.

velopment of firms akin to the laws of nature in accordance with which living organisms appear to grow, and that the different stages of development are a function of age. Were this implication not present, then the life cycle concept would amount to little more than a statement that if we look at the past we find that all firms had some sort of a beginning, a period of existence and, if now extinct, an end. Even if a careful collection of the relevant facts about groups of firms in like circumstances should establish a statistical pattern in which some affinity in origin, regularity in development and similarity in disappearance could be discerned, it might be interesting history and might enable one to deduce a variety of *ad hoc* theories but it would not be a theory of development without the further generalizations about the principles according to which the life cycle proceeds.

Whatever superficial plausibility such a theory may have had in the days of the "family firm,"[2] it lost even that when the publicly held corporation became the dominant type of firm. Even Marshall, who was an early exponent in economics of this theory of the growth of the firm, was doubtful about its applicability to the joint-stock company, and I would not spend much time on it now had it not been recently adopted and put forward with vigor by one of America's foremost economists. Kenneth Boulding has virtually called for a "life cycle" theory of the firm[3] and has categorically insisted that there is an "inexorable and irre-

[2] In a paper published on the sizes of businesses in the textile industries in parts of England from 1884 to 1911, S. J. Chapman and T. S. Ashton came out rather wholeheartedly in favor of a life cycle interpretation of the development of firms: "Indeed the growth of a business and the volume and form which it ultimately assumes are apparently determined in somewhat the same fashion as the development of an organism in the animal or vegetable world. As there is a normal size and form for a man, so but less markedly, are there normal sizes and forms for businesses." "The Sizes of Businesses, Mainly in the Textile Industries," *Jour. Royal Stat. Soc.*, Apr. 1914, LXXVII, 512. In this article the analogy between the firm and the biological organism is carried very far, but in a "belated appendix" Professor Ashton, in his characteristically cautious way, very much qualifies the analogy: "The picture of the growth of an industry outlined here recalls a well-known passage in which Dr. Marshall compared business undertakings with the trees of the forest; and other biological analogies spring so readily to mind that it may be more useful to point out the differences, rather than the similarities, between the life-history of businesses and that of plants, or animals, or men. Businesses are by no means always small at birth; many are born of complete or almost complete stature. In their growth they obey no one law. A few apparently undergo a steady expansion. . . . With others, increase in size takes place by a sudden leap. . . . " "The Growth of Textile Businesses in the Oldham District, 1884-1924," *Jour. Royal Stat. Soc.*, May 1926, LXXXIX, 572. Professor Ashton attributes some of the differences between the development of firms in the earlier (1884-1914) and later (1918-1924) periods to the development of the joint-stock company.

[3] ". . . we must go on further to discuss the problem of what determines the 'optimum' or equilibrium balance sheet itself, as this is also to some extent under the control of the firm. This should bring us directly into 'life-cycle' theory, and indeed one would have expected Marshall's famous analogy of the trees of the forest again to have led economists to a discussion of the forces which determine the birth, growth, decline, and death of a

versible movement towards the equilibrium of death. Individual, family, firm, nation, and civilization all follow the same grim law, and the history of any organism is strikingly reminiscent of the rise and fall of populations on the road to extinction. . . ."[4]

The purposes a life cycle theory of the firm would serve are obvious, yet the theory as a bare undeveloped hypothesis has existed for a long time and nothing has been done to construct from it a consistent theoretical system with sufficient content to enable it to be used for any purpose whatsoever.[5] The basic hypothesis is not one from which significant logical consequences can be deduced, such as can be deduced,[6] for example, from the proposition that firms attempt to maximize profits. Supplementary hypotheses about the kind of organism the firm is and the nature of its life cycle are required. Although we have a respectable collection of information about firms, it has not stimulated economists even to suggest the further hypotheses necessary to the development of a life cycle theory of the firm. This, I think, is primarily because the available evidence does not support the theory that firms have a life cycle characterized by a consistent transition through recognizable stages of development similar to those of living organisms. Indeed, just the opposite conclusion must be drawn: the development of firms does not proceed according to the same "grim" laws as does that of living organisms. In the face of the evidence one is led to wonder why the analogy persists and why there is still a demand for a life cycle theory of the firm.

The purpose of analogical reasoning in which we consciously and

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firm. In fact the theory of the firm, and of the economic organism in general, has not developed along these lines . . . much of the static theory of the firm can be salvaged . . . nevertheless, even when this has been done we still do not have a life-cycle theory. . . ." Kenneth E. Boulding, *A Reconstruction of Economics* (New York: Wiley & Sons, 1950), p. 34.

[4] *Ibid.*, p. 38.

[5] The idea that a firm's vigor declines with age, which follows naturally from the notion that firms have life cycles, did, however, enable Marshall to maintain the possibility of competitive equilibrium even when firms operated under increasing returns to scale. Growth takes time, and Marshall argued that before a business man got big enough to obtain a monopolistic position, his "progress is likely to be arrested by the decay, if not of his faculties, yet of his liking for energetic work." And if conditions in an industry were such that new firms could quickly master the economies of scale, then it would be likely that the established firms would be "supplanted quickly by still younger firms with yet newer methods." See Alfred Marshall, *Principles of Economics* (London: Macmillan, 1920, 8th ed.) pp. 286-87; also p. 808, footnote 2. The importance of this decline in a firm's luck or skill for the Marshallian use of the concept of the representative firm is clearly brought out by G. F. Shove in the symposium on "Increasing Returns and the Representative Firm," *Econ. Jour.*, Mar. 1930, XL, especially 109.

[6] Theoretical models of competition between "populations" or of the conditions of population equilibria do not require the assumption that individuals *develop* in accordance with life cycle patterns but merely that there exist "birth" and "death" rates.

systematically apply the explanation of one series of events to another very different series of events is to help us better to understand the nature of the latter, which presumably is less well understood than the former. If the analogy has really helpful explanatory value, there must be some reason for believing that the two series of events have enough in common for the explanation of one, *mutatis mutandis*, to provide at least a partial explanation of the other. This type of analogy must be distinguished from the purely metaphorical analogy in which the resemblances between two phenomena are used to add a picturesque note to an otherwise dull analysis and to help a reader to see more clearly the outlines of a process being described by enabling him to draw on what he knows in order to imagine the unknown. Analogies of this sort are not only useful but almost indispensable to human thought.

The biological analogies of the firm are not of this metaphorical type or there would be no call to push them into service to help *explain* the development of firms. They are clearly related to the whole family of analogies between biological organisms and social institutions that flourished in profusion during the 19th century[7] but which are, for the most part, no longer popular among social scientists, although curiously enough they are apparently still popular among some biologists.[8] In the notion that a firm is an organism akin to biological organisms, there is an implication that, since all such organisms have something in common, we can use our knowledge of biological organisms to gain more insight into the firm. It is not an easy task even for the biologist to state unambiguously what is meant by an organism[9] or what distinguishes the biological organism from non-living matter. But in principle it is characteristic of biological organisms that they reproduce and have an identifiable pattern of development that can be explained by the genetic nature of their constitution.[10] Furthermore, the particular pattern of

[7] These analogies are, as a matter of fact, very old and are found in classical literature. It is not even clear whether their first use was to help in explaining the nature of biological organisms by analogy with social institutions or in explaining the nature of social institutions by analogy with biological organisms. See Oswei Temkin, "Metaphors of Human Biology," in *Science and Civilization*, Robert C. Stauffer, editor (Madison: University of Wisconsin Press, 1949).

[8] See, for example, a series of papers published under the general title "Levels of Integration in Biological and Social Systems," *Biological Symposia*, 1942, VIII, in the introduction to which the editor stated: "What these papers seem to be saying, in most general terms, is this: The organism and the society are not merely analogues; they are varieties of something more general . . ." (p. 5).

[9] See J. H. Woodger, "The 'Concept of the Organism' and the Relation between Embryology and Genetics," *Quart. Rev. Biol.*, May 1930, V, 6 ff. It should be noted that the concept of "organism" as used in philosophy, notably by Alfred Whitehead, has no biological connotation.

[10] Moreover, biological organisms have a form in a sense in which societies (and firms) do not. This was one of the objections to the use of the economic analogy to explain bio-

development that is supposed to characterize firms—birth, youth, maturity, old age, death—is characteristic only of biological organisms that reproduce sexually. Organisms whose reproductive processes are primarily asexual have in general a very different pattern of development in which *death* plays no part,[11] and certainly the development of firms shows no pattern similar even to that of organisms that reproduce asexually. Clearly the one thing a firm does not have in common with biological organisms is a genetic constitution, and yet this is the one factor that determines the life cycle of biological organisms.

The characteristic use of biological analogies in economics is to suggest explanations of events that do not depend upon the conscious willed decisions of human beings. This is not, of course, characteristic of biology as such, for some branches of biology are concerned with learning processes and decision making, with purposive motivation and conscious choice in men as well as animals. In this, biology overlaps sociology and psychology and, in a sense, even economics. Information drawn from these branches of biology can be useful in helping us to understand the behavior of men and consequently of the institutions men create and operate. In using such information, however, we are not dealing with analogies at all, but with essentially the same problems on a more complex scale. But, paradoxically, where explicit biological analogies crop up in economics they are drawn exclusively from that aspect of biology which deals with the non-motivated behavior of organisms or in which motivation does not make any difference.

So it is with the life cycle analogy. We have no reason whatsoever for thinking that the growth pattern of a biological organism is *willed* by the organism itself. On the other hand, we have every reason for thinking that the growth of a firm is willed by those who make the decisions of the firm and are themselves part of the firm, and the proof of this lies in the fact that no one can describe the development of any given firm or explain how it came to be the size it is except in terms of decisions taken by individual men. Such decisions, to be sure, are constrained by the environment and by the capacity of the men who make them, but we know of no *general* "laws" predetermining men's choices, nor have we as yet any established basis for suspecting the existence of such laws. By contrast no one would seriously attempt to explain the transition from infancy to manhood or the normal processes of aging in terms of

logical facts: "The economic metaphors . . . do not account for the biological phenomenon of form." O. Temkin, *op. cit.*, p. 184.

[11] And yet Boulding points out that the chief difference between biological and social organisms is the absence of sexual reproduction and argues that the "genetic processes in the social system are perhaps somewhat more akin to asexual reproduction . . .", *op. cit.*, p. 7.

such decisions, for we have every reason for thinking that these matters are predetermined by the nature of the living organism.

There can be no doubt, I think, that to liken a firm to an organism and then attempt to explain its growth by reference to the laws of growth of biological organisms is an ill-founded procedure. If it were no more than this, one could still question whether one should take the trouble of seriously analyzing the analogy. But, besides being ill-founded, this type of reasoning about the firm obscures, if it does not implicitly deny, the fact that firms are institutions created by men to serve the purposes of men. It can be admitted that to some extent firms operate automatically in accordance with the principles governing the mechanism constructed,[12] but to abandon their development to the laws of nature diverts attention from the importance of human decisions and motives, and from problems of ethics and public policy, and surrounds the whole question of the growth of the firm with an aura of "naturalness" and even inevitability.[13]

"Viability" Analysis

The second type of biological analogy I wish to discuss claims to have drawn on the principles of biological evolution and natural selection which were first put forth in a comprehensive form by Darwin. The discussion of the processes and progress of human society in terms of natural selection and evolution followed close on the introduction of these concepts into biology.[14] The analogy I am concerned with here avoids the crudities and attempts to avoid the value judgments that characterized the 19th century doctrines of Spencer and his followers in their application of these principles to society. It is very modern in its emphasis on uncertainty and statistical probabilities. Nevertheless, it

[12] See the discussion of homeostasis below. If analogies must be used, there is much to be said for comparing a firm to a machine that operates in accordance with the principles governing its physical organization, but the construction, evolution and uses of which are determined by a mechanic. However, neither type of analogical reasoning has much explanatory value.

[13] Not the least of the effects of this kind of reasoning is to bring "natural law" to the defense of the *status quo*. See the discussion in Richard Hofstadter, *Social Darwinism in American Thought* (Philadelphia: University of Pennsylvania Press, 1944) pp. 30 ff. and the quotation (p. 31) he gives from John D. Rockefeller: "The growth of a large business is merely a survival of the fittest. . . . The American Beauty rose can be produced in the splendor and fragrance which bring cheer to its beholder only by sacrificing the early buds which grow up around it. This is not an evil tendency in business. It is merely the working out of a law of nature and a law of God."

[14] This subject was widely debated throughout the Western world and the literature is far too extensive to cite. For a useful, though limited, bibliography, see Hofstadter, *op. cit.* The idea of the survival of the fittest, however, was first suggested to Darwin by a work in the social sciences—Malthus on population.

is open to the same basic objections that in my opinion adhere to all such biological analogies.

The purpose of the theory is to get around a logical difficulty alleged to be inherent in the assumption that firms attempt to maximize profits in a world characterized by uncertainty about the future. If uncertainty exists, firms cannot know in advance the results of their actions. There is always a variety of possible outcomes, each of which is more or less probable. Hence the expected outcome of any action by a firm can only be viewed as a distribution of possible outcomes, and it is argued that while a firm can select those courses of action that have an optimum distribution of outcomes from its point of view, it makes no sense to say that the firm *maximizes* anything, since it is impossible to maximize a distribution. Hence profit maximization as a criterion for action is regarded as meaningless. According to the "viability analysis," however, this is not a serious difficulty for the economist if he draws on the principle of natural selection and considers the adaptation required of firms by their environment.

The argument, originally set forth by Armen A. Alchian,[15] is as follows: To survive firms must make positive profits. Hence positive profits can be treated as the criterion of natural selection—the firms that make profits are selected or "adopted" by the environment, others are rejected and disappear. This holds whether firms consciously try to make profits or not; even if the actions of firms were completely random and determined only by chance, the firms surviving, *i.e.*, adopted by the environment, would be those that happened to act appropriately and thus made profits. Hence "individual motivation and foresight, while sufficient, are not necessary,"[16] since the economist with his knowledge of the conditions of survival can, like the biologist, predict "the effects of environmental changes on the surviving class of living organisms."[17]

Alchian argues that the introduction of the supplementary and realistic assumption of purposive behavior by firms merely "expands" the model and also makes it useful in explaining the nature of purposive behavior under conditions of uncertainty.[18] If firms do try to make profits even though (because of uncertainty) they don't know how to do so, then clearly they will have a motive for imitating what appears to be

[15] Armen A. Alchian, "Uncertainty, Evolution, and Economic Theory," *Jour. Pol. Econ.*, June, 1950, LVIII.

[16] *Ibid.*, p. 217.

[17] *Ibid.*, p. 220.

[18] "It is not argued that there is no purposive, foresighted behavior present in reality. In adding this realistic element—adaptation by individuals with foresight and purposive motivation—we are expanding the preceding extreme model." *Ibid.*, p. 217.

successful action by other firms. This explains conventional rules of behavior (traditional markups, etc.) which can be looked on as "codified imitations of observed success."[19] This is the evolutionary aspect of the theory: successful innovations—regarded by analogy as "mutations"—are transmitted by imitation to other firms. Venturesome innovation and trial and error adaptation are also purposive acts which, if successful, are "adopted" by the environment. Thus "most conventional economic tools and concepts are still useful, although in a vastly different analytical framework—one which is closely akin to the theory of biological evolution. The economic counterparts of genetic heredity, mutations, and natural selection are imitation, innovation, and positive profits."[20]

In accepting and enlarging upon Alchian's argument Stephen Enke has argued that, if competition were so intense that zero profits would result in the long run, economists could make "aggregate predictions" *as if* every firm knew how to secure maximum long-run profits. For with intense competition only firms that succeeded in maximizing profits would survive.[21] But under these circumstances, Enke notes, the economist can use the traditional marginal analysis and his predictions will be the same as they would be if he employed the "viability analysis." Which of the two he uses however is not "immaterial," since "the language of the former method seems pedagogically and scientifically inferior because it attributes a quite unreasonable degree of omniscience and prescience to entrepreneurs."[22]

There is much to be said about this revival of an old approach to human affairs and about its relation to the traditional marginalist approach in economics, in particular as to whether the two approaches really answer the same types of questions about the effect of "environmental" changes on price and output. In this paper I am not so much concerned to present an analytical critique of the theory as to discuss the applicability of the biological analogy and the implications involved in its use. Again we find that the characteristic of the analogy employed

[19] *Ibid.*, p. 218.

[20] *Ibid.*, p. 219. It should be noted that the treatment of imitation as analogous to genetic heredity is essential to give the principle of natural selection any evolutionary significance. Natural selection has two meanings: "In a broad sense it covers all cases of differential survival: but from the evolutionary point of view it covers only the differential transmission of inheritable variations." See Julian Huxley, *Evolution, the Modern Synthesis* (London: Allen & Unwin, 1942), p. 16.

[21] Stephen Enke, "On Maximizing Profits: A Distinction between Chamberlin and Robinson." *Am. Econ. Rev.*, Sept., 1951, XLI. The assumption of intense competition is essential for the results claimed by the authors of this approach, as we shall see below.

[22] *Ibid.*, p. 573.

is to provide an explanation of human affairs that does not depend on human motives. The alleged superiority of "viability" over marginal analysis lies in the claim that it is valid even if men do not know what they are doing. No matter what men's motives are, the outcome is determined not by the individual participants, but by an environment beyond their control. Natural selection is substituted for purposive profit-maximizing behavior just as in biology natural selection replaced the concept of special creation of species.

In biology the theory of natural selection requires the postulate that competition—a struggle for existence—prevails, but it is a postulate that rests firmly on observed facts. Darwin deduced the struggle for existence from two empirical propositions: all organisms tend to increase in a geometrical ratio, and the numbers of any species remain more or less constant.[23] From this it follows that a struggle for existence must take place. Translated into economic terminology, the explanation of competition in nature is found in the rate of entry. The "excessive entry" is due to the nature of biological reproduction. But how shall we explain competition in economic affairs where there is no biological reproduction? The psychological assumption of the traditional economic theory that businessmen like to make money and strive to make as much as is practicable performs a function in economic analysis similar to that of the physiological assumption in the biological theory of natural selection that the reproduction of organisms is of a geometric type—it provides the explanation of competition (and in economics, incidentally, also of monopoly). To be sure, the two assumptions rest on vastly different factual foundations and should not be treated as analogous. We can only say that there is some evidence that such a psychological motivation is widely prevalent and that we have found we can obtain useful results by assuming it. If we abandon this assumption, and particularly if we assume that men act randomly, we cannot explain competition, for there is nothing in the reproductive processes of firms that would ensure that more firms would constantly be created than can survive; and certainly from observations of the real world we can hardly assume that competition is so intense that zero profits will result in the long run or that only the best adapted firms can survive.

Although insisting it is not necessary, Alchian is prepared to assume that firms do strive for positive profits.[24] But I cannot see that even this is sufficient to explain the existence of competition sufficiently intense to enable the economist to assume that only the "appropriately adapted"

[23] See Julian Huxley, *op. cit.*, p. 14.

[24] "The pursuit of profits, and not some hypothetical undefinable perfect situation, is the relevant objective whose fulfilment is rewarded with survival. Unfortunately, even this proximate objective is too high." *Op. cit.*, p. 218.

firms will survive. Even with this modification firms would still be affected by environmental changes only when these changes cause losses. When changes in the environment opened up new opportunities without acting adversely on the old, then, on the assumptions of this analysis, firms would not respond at all to the new conditions since profits would already be positive and firms are assumed to be uninterested in increasing their profits.[25]

Once motivation is introduced the usefulness of the model becomes even more questionable. Great emphasis is laid on the predictive power of the viability theory. Therefore the essence of the theory cannot be that those firms best adapted to the economic environment will survive; this could easily become a circular argument. Rather it is that the economist can know what the conditions of survival are and therefore can know the characteristics of firms that will be required by these conditions of survival. Now, apart from the pardonable notion that economists have a special knowledge denied to firms[26]—which is quite appropriate if firms (but not economists) are treated as non-motivated organisms—this would seem reasonable provided either that environmental conditions are identifiable and are independent of the actions of the firm or, if they are dependent on the actions of firms, that the economist can know how firms will, by their actions, change the environment.

Once human will and human motivation are recognized as important constituents of the situation, there is no *a priori* justification for assuming that firms, in their struggle for profits, will not attempt as much consciously to adapt the environment to their own purposes as to adapt

[25] Once we admit that when opportunities for making money arise, some firms will prefer to take a chance on making more money rather than to rest content with less, we might just as well assume that firms act *as if* they were attempting to maximize profits, since, for the purpose of detecting the direction of change, we get more useful results from using this assumption than from any other that has yet been devised. It should be obvious that for this purpose marginal movements are the significant ones, yet the viability approach leaves us no way of predicting marginal movements except under special conditions and leaves us completely helpless if there is a pronounced lag between the introduction of a given environmental change and the effect of the change on the birth and death rates of firms, for "these long-run forces of adjustment operate in the main through the effect of altered conditions of survival and the births and deaths of firms." Enke, *op. cit.*, p. 572.

[26] For the life of me I can't see why it is reasonable (on grounds other than professional pride) to endow the economist with this "unreasonable degree of omniscience and prescience" and not entrepreneurs. Although this is incidental to our discussion, it seems to me that the logic of the argument runs somewhat as follows: It is impossible to know in advance what actions will yield maximum profits. Therefore firms cannot know in advance what they should do to maximize their profits. If there is intense competition, zero profits will be maximum profits and firms making negative profits will fail. Economists can know the conditions of survival. Therefore economists can know what type of firm will escape negative profits. Therefore economists can know what firms must do to make zero or positive profits. Therefore economists can know how maximum profits can be obtained. Therefore it is *not* impossible to know in advance what actions will yield maximum profits.

One can only suggest that firms should hire economists!

themselves to the environment. After all, one of the chief characteristics of man that distinguishes him from other creatures is the remarkable range of his ability to alter his environment or to become independent of it. Underlying the viability analysis is the assumption that, even if firms can and do make more or less intelligent choices, they can do nothing in unpredictable ways to "force" the environment to "adopt," and thus make successful, the results of their action.

The concept of the environment of firms on which the economist using "viability" analysis bases his predictions is by no means clear. There is little doubt that there are parts of the external environment of firms which are identifiable and which for all practical purposes we can safely assume will not be quickly or unpredictably altered by firms—geographical factors, the conditions of transportation, established government policies. There are other aspects of the environment that can be altered within fairly narrow limits and in more or less predictable ways—the amount of natural resources, the state of employment. There are still other aspects of the environment, equally important for survival, which we cannot assume are beyond the influence of firms and which can be unpredictably altered by them in a large number of ways—the state of technology, the tastes of consumers.

It is these unpredictable possibilities of altering the environment by man that create difficulties in comparing the economist to the biologist observing the processes of natural selection and studying the nature of adaptation. Animals, too, alter their environment, but in a rather unconscious fashion without much deliberation about different probable outcomes of their actions. The possibilities open to animals of affecting their environment in a given period of time are so much more restricted than those open to men that the biologist has a very much easier task, for the relative consistency of animal behavior and the relatively narrow limits within which animals can act give him a more secure basis for prediction.[27] If firms can deliberate, if they can weigh the relative profitability of assaulting the environment itself and if they can act in ways unknown to the economist, what are the "realized requisites of survival" that can give the economist confidence in his predictions? Alchian has treated innovations as analogous to biological mutations. But mutations are "alterations in the substance of the hereditary constitution" of an organism,[28] while innovations, though they may consist of changes in the constitution of firms, more often than not are direct attempts by

[27] As a matter of fact, it is doubtful if many biologists would agree that their powers of prediction are as sweeping as are implied here, particularly if man is included among the organisms with respect to whom the effects of environmental change are predicted.

[28] Huxley, *op. cit.*, p. 18.

firms to alter their environment. In other words, innovations are directly related to the environment of firms whereas the biologists tell us that genetic mutations are apparently completely unrelated either to the environment or to the agent inducing the mutation. The biologist cannot explain why mutations take the course they do while the economist, if he can assume with some justification that the activity of firms is induced by a desire for profits, has a plausible partial explanation of innovation.

It is not possible to go very far with this aspect of the matter because the authors of the viability approach have given us no hint of what they mean by the environment. It is vaguely referred to as an "adoptive mechanism"[29] but in view of the enormous complexity of the interrelationships in the economy, a prediction of the types of organisms that will survive a given change in the environment involves the prediction of a new general equilibrium and does not seem to me to be an "intellectually more modest and realistic approach"[30] than any other. After all, even the most ardent proponent of the marginal analysis never claimed that his tools enabled him to make such sweeping predictions as are implied here. By its very nature a prediction of the kinds of firms that will survive in the long run must take account of all the reactions and interactions that a given change in the environment will induce. With our present knowledge this is impossible, and the assertion that "the economist, using the present analytical tools developed in the analysis of the firm under certainty, can predict the more adoptable or viable types of economic interrelationships that will be induced by environmental change even if individuals themselves are unable to ascertain them"[31] places the wrong interpretation on the kind of thing the economist can do. If he can predict the consequences of environmental changes, it is not because certain types of interrelationships are more "viable" in a long-run sense, but because he has an idea of how people will behave. He knows little about long-run viability since he knows very little about all of the secondary and tertiary reactions that will in the end determine the "conditions of survival"—at least he has as yet given little convincing evidence of such knowledge.

Alchian's central objective of exploring the "precise role and nature of purposive behavior in the presence of uncertainty and incomplete

[29] "The suggested approach embodies the principles of biological evolution and natural selection by interpreting the economic system as an adoptive mechanism which chooses among exploratory actions generated by the adaptive pursuit of 'success' or 'profits.'" Alchian, *op. cit.*, p. 211.

[30] *Ibid.*, p. 221.

[31] *Ibid.*, p. 220.

information" is important[32] but the biological framework in which he has cast his model has led him to underestimate the significance of the very thing he claims to be exploring. After all, one of the more powerful effects of uncertainty is to stimulate firms to take steps to reduce it by operating directly on the environmental conditions that cause it and men have a greater power consciously to change their environment than has any other organism. A direct approach, stripped of biological trappings, to the problem of what happens when men try to reach an objective but don't know the "best" route, would not lead to underemphasis on the significance of purposive activity on the part of men. It is by no means "straightforward" to assume non-motivation,[33] for without motivation economic competition, leading to the elimination of all but the best adapted within a community, cannot be assumed. Hence, if the operation of natural selection through competition is made the guiding principle of the analytical technique, then an assumption equivalent to profit maximization must be made and the professed *raison d'être* of the viability approach disappears.

Homeostasis of the Firm

A third biological concept that has appeared in one form or another in economic literature is the concept of homeostasis.[34] Organisms are so constructed that there is a certain "equilibrium" internal condition which their bodies are organized to maintain. Any disturbance of the equilibrium sets forces in motion that will restore it. Kenneth Boulding considers that "The simplest theory of the firm is to assume that there is a 'homeostasis of the balance sheet'—that there is some desired quantity of all the various items in the balance sheet, and that any disturbance of this structure immediately sets in motion forces which will restore the status quo."[35]

Once again we find the characteristic of the biological analogy—action taking place in human affairs without the intervention of human decisions based on deliberation and choice. But here it is applied to describe a characteristic of organized activity and a possible method by which men may achieve certain objectives. The notion of homeo-

[32] *Ibid.*, p. 221.

[33] "It is straightforward, if not heuristic, to start with complete uncertainty and non-motivation and then to add elements of foresight and motivation in the process of building an analytical model. The opposite approach, which starts with certainty and unique motivation, must abandon its basic principles as soon as uncertainty and mixed motivations are recognized." *Ibid.*, p. 221.

[34] C. Reinold Noyes, for example, who believes that "economics is fundamentally a biological science" uses the physiological concept of the homeostasis of the body in his discussion of consumers' wants. See *Economic Man* (New York: Columbia University Press, 1948), pp. 29 ff.

[35] *Op. cit.*, p. 27.

stasis, treated simply as a principle of organization, does not obscure the importance of purposive behavior in human affairs but rather emphasizes its significance and illuminates its rôle in a complex social framework. This analogy is of the helpful descriptive sort: it is not claimed that the principles of physiology can explain the working of a firm.

Indeed, one could legitimately object to the appropriateness of including the "homeostasis theory" of the firm among the biological theories. Homeostasis is a word drawn from physiology, but it describes a characteristic of any activity that takes place within a framework so constructed that certain types of action are automatically induced without any interference from whatever agency is responsible for the construction. This notion can be extended from the physio-chemical reactions which take place within a living organism in order to maintain a constant internal environment, to include the operation of a thermostatically controlled heating or air conditioning system[36] and even the conduct of a game of tag according to predetermined rules.

Thus the managers of a firm may lay down rules for the operation of the firm which are determined with reference to some "ideal" interrelationship of the parts of the firm. The desired ratio of assets to liabilities, of inventories to sales, of liquid assets to fixed assets, etc., may be determined in advance and an organization so constructed that any disturbance of the desired ratio automatically sets in motion a process to restore it. There can be little doubt that the more complex an organization becomes, the more necessary it is to establish areas of quasi-automatic operation. The importance of routine as a means of taking care of some aspects of life in order that others may be given more attention has frequently been stressed.[37] The fact that many business decisions are not "genuine decisions," but are quasi-automatic and made routinely in response to accepted signals without a consideration of alternative choices has misled many into attacking the assumption that firms try to make as much money as they can—particularly where it can be shown that the rules governing the routine actions are not fully consistent with profit maximization.

This whole area of the behavior of the firm is still not adequately explained. Imitation of apparent success may, as Alchian suggests, account for some habitual and apparently irrational behavior. The persistence of routine action after the conditions for which it was appropriate have passed may also account for some of it; other partial

[36] See Kenneth Boulding, "Implications for General Economics of More Realistic Theories of the Firm," *Am. Econ. Rev.*, (Papers and Proceedings), May, 1952, XLII, 37 ff.

[37] For a well-balanced discussion of the rôle of habitual behavior and routine decisions in business activity see George Katona, *Psychological Analysis of Economic Behavior* (New York: McGraw-Hill, 1951), especially pp. 229 ff.

explanations have been suggested.[38] The theory of homeostasis provides a formal framework of explanation into which many routine responses can be fitted, but it throws no light at all—nor does it claim to—on why and how the "ideal" relationships between the relevant variables which the firm is now attempting to maintain were originally established or on the conditions under which decisions may be made to alter them.[39] Strictly speaking, the basic principle is not a biological one at all in spite of the name given it. It is a general principle of organization, examples of which may be found in biology, in mechanics and in social organization, and if one chooses to introduce into economics another mysterious word borrowed from another science—well, that is a matter of taste.

* * *

The desire to draw biological concepts into the explanation of social affairs is hard to understand since for the most part they add to rather than subtract from the difficulties of understanding social institutions. The observed regularities and the postulated explanations of nonmotivated biological behavior are related to chemical processes, thermal reactions and the like; they are unrelated to conscious deliberation by the organism itself. The appeal of such biological analogies to the social scientist plainly springs from a persistent yearning to discover "laws" that determine the outcome of human actions, probably because the discovery of such laws would rid the social sciences of the uncertainties and complexities that arise from the apparent "free will" of man and would endow them with that more reliable power of prediction which for some is the essence of "science." It should be noted that the distinction to be made is not that between human and non-human beings but between actions that are in some degree bound up with and determined by a reasoning and choosing process, no matter how rudimentary, and actions that are, as it were, "built into" the organism, or into the relationship between the organism and its environment, and cannot be altered by conscious decision of the organism itself.

Our knowledge of why men do what they do is very imperfect, but there is considerable evidence that consciously formulated human values do affect men's actions, that many decisions are reached after a conscious consideration of alternatives, and that men have a wide range of genuine choices. The information that we possess about the behavior of firms, small as it is, does furnish us with some plausible explanations

[38] *Ibid.*, p. 230.

[39] The homeostasis principle ". . . says nothing about what determines the equilibrium state itself. In biology this can generally be assumed to be given by the genetic constitution: in social organisms, the equilibrium position of the organism itself is to a considerable degree under the control of the organism's director," Boulding, *Reconstruction of Economics*, pp. 33-34.

of what firms are trying to do and why.[40] Biological explanations reduce, if they do not destroy, the value of this information and put nothing in its place.[41]

To treat the growth of the firm as the unfolding of its genetic nature is downright obscurantism.[42] To treat innovations as chance mutations not only obscures their significance but leaves them essentially unexplained, while to treat them directly as purposive attempts of men to *do* something makes them far more understandable. To draw an analogy between genetic heredity and the purposive imitation of success is to imply that in biology the characteristics acquired by one generation in adapting to its environment will be transmitted to future generations. This is precisely what does *not* happen in biological evolution. Even as a metaphor it is badly chosen although in principle metaphorical illustrations are legitimate and useful.[43] But in seeking the fundamental explanations of economic and social phenomena in human affairs the economist, and the social scientist in general, would be well advised to attack his problems directly and in their own terms rather than indirectly by imposing sweeping biological models upon them.

[40] As Jacob Marschak observed, "It would be a pity if we should not avail ourselves of that type of hypothesis provided by our insight—however imperfect or ambiguous—in the behavior of our fellow-men. This is our only advantage against those who study genes or electrons: they are not themselves genes or electrons." "A Discussion on Methods in Economics," *Jour. Pol. Econ.*, June 1942, XLIX, 445.

[41] If one attempts to apply the biological evolutionary principle to human activity, one must first show that human activity does not differ in kind from that of other organisms, and the argument of one noted biologist must be shown to be invalid: "Man differs from any previous dominant type in that he can consciously formulate values. And the realization of these in relation to the priority determined by whatever scale of values is adopted, must accordingly be added to the criteria of biological progress, once advance has reached the human level." Huxley, *op. cit.*, p. 575.

[42] Boulding, for example, finds "mysterious" the "problem of death and decay" of firms and asserts that "the question as to whether death is inherent in the structure of organization itself, or whether it is an accident is one that must remain unanswered, especially in regard to the social organization." "Implications for General Economics of More Realistic Theories of the Firm," p. 40.

It is surely unwarranted to confine the explanation of the disappearance of firms to some obscure thing, "inherent in the structure of organization itself" or to "accident," and it would not have been so confined if the very nature of the problem had not been prejudged and limited by the biological approach. I am not sure that there is any precise meaning at all in Boulding's statement and I suspect that this is the reason his question "must remain unanswered."

[43] But one should be discriminating in using them. The varieties of biological phenomena are so numerous that a parallel may be found somewhere for every conceivable type of social situation. There is even apparently a type of symbiotic growth among algae and fungi which combine to form characteristic lichens that can be compared to the growth of a firm by merger. Very curious "parallels" are sometimes drawn. For example, one biologist finds that "There is an interesting parallel in the need for salt by the organism and the epiorganism [*i.e.*, society]. The commodity is so important for the social group that it was one of the earliest and most prized objects traded . . ."! R. W. Gerard, *Biological Symposia, op. cit.*, pp. 77-78.

DEPRECIATION ALLOWANCES, REPLACEMENT REQUIREMENTS AND GROWTH

By ROBERT EISNER*

I. *Setting of the Problem*

Recent years have witnessed an increasing attention to the size of depreciation allowances. It has been realized that the magnitude of depreciation charges is a major determinant in the distribution of income. Fundamentally, the larger are depreciation allowances the larger the proportion of the national product which will be absorbed by business enterprises before any "distribution" of income takes place. For one thing, the higher are depreciation charges, other things remaining unchanged, the lower must be "profits"; hence the lower will be profits taxes. And a corporation whose official profit figures are low may also be better able to resist trade unions, stockholders and others who might covet the corporate gain.

A not uncommon defense against charges by labor and consumer groups that corporate profits have been unconscionably high has been the argument that depreciation allowances are too low and hence profits are overstated. This argument, in perhaps unsophisticated fashion, declares that the cost of replacing expiring equipment in today's inflated market is actually much greater than current depreciation charges, which are related to original cost of assets.

There are various levels at which those who are so inclined may care to meet this argument. For one thing, they may raise the effect of technological advance and increases in productive efficiency. It may be quite possible, in spite of inflated prices, to replace old assets with new ones whose dollar cost per unit of productive capacity or output is less than that of the cheaper but less efficient assets being replaced. Secondly, some question may be posed as to the basic relevance of replacement requirements to the consideration of depreciation allowances. Many accountants will insist that depreciation accounting is merely a device for allocating original cost and is entirely unrelated to replacement requirements.

It is not my purpose to do more than call attention to the challenge as to the relevance of replacement requirements to depreciation allow-

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ances. A more complete treatment would have to consider depreciation allowances as an aspect of basic social, political, and moral problems of the rights of ownership. Since, however, replacement requirements and depreciation allowances have been connected directly in professional and popular discussions, it seems appropriate, regardless of the correctness of that connection, to apply certain tools of formal analysis to their joint consideration.

II. *Assumptions*

Let us lay the groundwork for our formal analysis by setting forth the following symbols. Our subsequent assumptions will enable us to evade the aggregation problem and relate our variables to either the economy as a whole or the individual firm.

I = gross investment
R = replacement requirements
D = depreciation charges
$E = (D/R) - 1$, the ratio by which depreciation charges exceed or fall short of replacement requirements
a = length of life of assets (in years)
b = period of amortization (in years)
t = the year to which a magnitude refers; thus
I_t = gross investment in the year t,
R_t = replacement requirements in the year t
$E_t = (D_t/R_t) - 1$, etc.
r = the rate of growth of gross investment

$$\left(r_t = \frac{I_t}{I_{t-1}} - 1\right). \tag{1}$$

Then let us add the following simplifying assumptions.

(1) All capital assets have the same length of life, a years.
(2) All capital assets have periods of amortization of the same length, b years.
(3) Gross investment grows at a constant rate, r.
(4) All depreciation charges are made by the "straight-line" method, that is, by allocating an equal amount of the original cost of each asset to each year of its amortization period.
(5) Depreciation charges are begun for each asset at the beginning of the calendar year following the year of its acquisition.[1]
(6) There is no change in the general level of prices.
(7) All capital assets are of the "one-horse-shay" variety, giving the

[1] Firms generally charge at least part of a year's depreciation to an asset in the year in which it is purchased. However, recognition of this fine point would merely complicate our mathematical expression without altering significantly our conclusions. We assume, in effect, that one full year's depreciation charge is made for each asset exactly one year after its installation and that subsequent charges on each asset are made at exactly annual intervals.

same level of service until their moment of extinction, at which point serviceability drops abruptly to zero.

The first three assumptions above should cause no difficulty. For our assumptions of identical time spans for all assets and identical rates of growth for all time periods the reader may substitute in his mind concepts of mean length of life, mean period of amortization and mean rate of growth. The fourth assumption, of straight-line depreciation, is both simplifying and reasonably realistic, since probably close to 90 per cent of all corporate capital assets are depreciated by the straight-line method.

We shall employ initially assumption (6), barring general price increases, to delineate the implications of real growth. We shall relax this assumption in the course of our analysis.

The one-horse-shay assumption (7) is the troublesome one, on which critics might well focus their attention. Its complete abandonment would complicate tremendously and perhaps vitiate much of the simplified analysis in this article. Fortunately, there seem to be weighty justifications for its use.

First, there does seem to be some agreement, particularly among accountants, that productive efficiency (not to be confused with value) of most capital goods drops more sharply when assets are old than when they are new. "One-horse-shay" assets are merely the limiting case of assets whose serviceability declines over time at an increasing rate. We may clarify this by a brief algebraic and geometric digression.

Let P=productive capacity and let g=age of asset.

Then, in our "general" case, which we shall refer to as Case A, we may state that

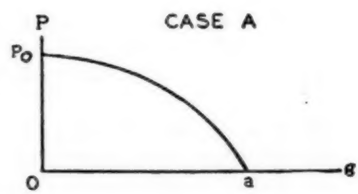
$$P = f(g) \tag{2}$$

such that

$$\frac{dP}{dg} < 0 \tag{2.1}$$

and

$$\frac{d^2P}{dg^2} < 0. \tag{2.2}$$

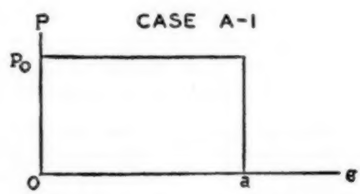


In the "one-horse-shay" situation which we shall dub Case A-1,

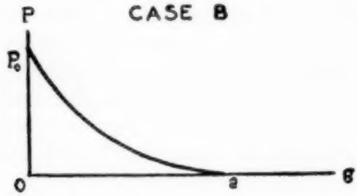
$$P = f_1(g) \tag{3}$$

such that

$$P = \begin{cases} P_0 & \text{for } 0 \gtreqless g < a \\ 0 & \text{for } g \geq a. \end{cases} \tag{3.1}$$



Our conviction that the common situation in the real world is certainly within the general category indicated by Case A and is probably close to that of Case A-1 is strengthened by the reflection that depreciation charges do not include charges for maintenance costs. It is thus quite legitimate in the function above to define P as the productive capacity of an asset which has been kept in good operating condition by appropriate repair and maintenance expenditures.



We may grant the existence of Case B, in which $(dP/dg) < 0$ but $(d^2p/dg^2) > 0$, but we shall ignore it in most of our subsequent analysis.[2]

III. *Replacement Requirements*

With the aid of the definitions and assumptions presented above we may now approach the problem of replacement requirements in straightforward fashion. From our definitions and assumption (3), that r is constant, we can write,

$$I_{t-a} = I_t(1 + r)^{-a}. \tag{4}$$

Now, on the basis of assumptions (1), (6), and (7), according to which there is no general change in prices and all assets remain fully productive for a years and then die a sudden death, replacement requirements are equal to the value of the assets installed a years earlier, whence

$$R_t = I_t(1 + r)^{-a}. \tag{5}$$

It is well to be fully aware of the implications of equation (5). In a stationary economy, since $r = 0$, replacement needs of any year are equal to gross investment of the current year. However, in a constantly

[2] For this dismissal of Case B we may offer the following justification:

1. Case B situations are likely to include a large proportion of the assets which are handled by methods other than straight-line depreciation. Though replacement requirements for Case B assets will be higher in growing firms than is indicated in our Case A-1 analysis, depreciation allowances may also be higher than is indicated by our assumption of straight-line depreciation.

2. To the extent that firms with Case B assets maintain straight-line depreciation they may be expected to write off their assets over a shorter period than the entire time of the assets' useful lives. This, as will be seen below, will increase depreciation allowances in growing firms and thus counterbalance the increased replacement requirements which we have ignored by our Case A-1 assumption.

This positive effect of growth on the ratio of depreciation allowances and replacement requirements requires only the general Case A assumption. However, the specific quantitative relationships which we shall advance below do depend on our Case A-1 ("one-horse-shay") assumption.

growing economy, replacement requirements in real terms are *less* than gross investment. The ratio of replacement requirements to gross investment varies inversely with the length of life of capital and the rate of growth.

IV. *The Basic Algebraic Relationship*

So far, our results, while perhaps not previously presented in this formal mathematical manner, are not new to economists. Indeed, George Terborgh emphasized that replacement requirements could account for an increasing proportion of gross investment in an economy with a declining rate of growth.[3] However, Terborgh, who was concerned in this emphasis with refuting Professor Hansen's doctrine of secular stagnation, did not concern himself with the rather inverse problem of "excessive"[4] depreciation allowances in their context of resultant lower statements of net income, investment and profits

We shall examine now, with the explicit assumptions we have indicated, the specific relationship between replacement requirements, depreciation allowances and the rate of growth, under the system of straight-line depreciation. We shall shortly distinguish two situations: (1) the period of depreciation of each asset is identical with the life of the asset; (2) the period of depreciation is shorter than the life of the asset. Situation 1, to which we shall refer as "unaccelerated amortization," may be taken as a limiting possibility in growing economies or growing firms, indicating a minimum disparity between depreciation allowances and replacement requirements. Situation 2, to which we shall refer as "accelerated amortization," indicates that this disparity may be, actually, of very substantial magnitude.

In both situations 1 and 2, if an asset is fully depreciated in b years, the proportion of the asset charged to depreciation in any one year is $1/b$. Therefore, the total depreciation charge in any year, t, is equal to $1/b$ multiplied by the value of assets installed in the years $t-b$ through $t-1$.[5] Thus, recalling (4),

$$D_t = \frac{I_t}{b} \sum_{n=1}^{b} (1 + r)^{-n}. \tag{6}$$

[3] *The Bogey of Economic Maturity* (Chicago, 1945), pp. 99–119.

[4] The term "excessive" is employed here merely to indicate the arithmetic relation to current replacement requirements. No implications are intended as to desirable policy from the point of view of financial reserve, investment decisions or other such matters.

[5] Depreciation charges would be larger and our conclusions would actually be strengthened somewhat if our assumption (5) were relaxed to recognize the fact that depreciation charges are generally made before an asset is one year old. For this would mean that the bulk of depreciation of each asset would be completed somewhat sooner and the charges made in any one year then would relate on the average to assets which were installed later. In a growing economy these later assets are, of course, of greater value than the assets installed at an earlier period.

Then, applying the usual rules for the sum of such a series, we find

$$D_t = I_t\left[\frac{1-(1+r)^{-b}}{br}\right]. \tag{7}$$

Dividing (7) by (5) and recalling that we have defined $E_t = (D_t/R_t) - 1$, we obtain

$$E_t = \frac{(1+r)^a - (1+r)^{a-b}}{br} - 1, \tag{8}$$

where E_t indicates the ratio by which depreciation charges exceed replacement requirements in the year t.

Situation 1: *Unaccelerated Amortization*

In the situation which we categorize as "unaccelerated amortization," the period of depreciation for each asset is identical with the period of its useful life or, in terms of our symbols, $a=b$. Substituting in (8) we secure,

$$E_t = \frac{(1+r)^a - 1}{ar} - 1. \tag{8.1}$$

Similarly, we may rewrite (7),

$$D_t = I_t\left[\frac{1-(1+r)^{-a}}{ar}\right]. \tag{7.1}$$

Our major findings can now be deduced quite readily. First, substituting, we see that when

$$r = 0, \quad D_t = I_t, \quad R_t = I_t,$$

and

$$E_t = \frac{I_t - I_t}{I_t} = 0.$$

But, differentiating (8.1) with respect to r, it can be proved that

$$\frac{\partial E_t}{\partial r} > 0 \text{ when } a > 1 \text{ and } r > -1 \text{ but not equal to zero,} \tag{8.2}$$

and

$$\frac{\partial E_t}{\partial a} \gtreqless 0 \quad \text{as} \quad r \gtreqless 0. \tag{8.3}$$

Then, so long as $r > -1$ (which includes all meaningful values of r),

$$E_t \gtreqless 0 \quad \text{as} \quad r \gtreqless 0. \tag{8.4}$$

Literary presentation of our equations may appropriately accentuate their impact.

1. On the aggregative level, replacement requirements equal depreciation allowances only in the very special case of a stationary economy. On the level of the individual firm, similarly, replacement requirements equal depreciation allowances only in the firm whose net investment is zero.[6]

2. Replacement requirements are more than depreciation allowances only in declining economies or shrinking firms.

3. Depreciation allowances exceed replacement requirements in growing economies and in growing firms. Since growth is clearly a dominant characteristic of both the American economy and its firms, this finding would seem to be of decisive significance.

4. The amount of the "excess" of depreciation allowances over replacement requirements varies directly with the rate of growth. Where the rate of growth is positive, the greater is the rate of growth the greater is the ratio by which depreciation allowances exceed replacement requirements. Where the rate of growth is negative, the smaller is the rate of growth (the faster gross investment is declining), the greater is the ratio by which depreciation allowances fall short of replacement requirements.

5. In growing economies or in growing firms the "excess" of depreciation allowances is greater as the life of assets is longer. In declining economies or in shrinking firms the proportion by which depreciation charges are less than replacement requirements is greater as the length of life of assets is greater.

Illustrative values of E_t for various values of r and a may help convey the significance of the relationships expressed in the equations above. Thus we may note that in an economy which grows steadily at a 3% rate and which applies straight-line depreciation methods throughout the life of its assets, the excess of depreciation allowances over replacement requirements for assets which last five years is 6.2%. For assets which last 10 years, this excess is 14.6%; for 15-year assets the excess is 24.0% and for 20-year assets the excess is 34.4%, etc. These excesses would be more for a more rapidly growing economy and less in a less rapidly growing economy.

[6] Where $r=0$, $D_t=I_t$; hence net investment $=I_t-D_t=0$.

Situation 2: Accelerated Amortization

The effect of changing the period of amortization may be determined by going back to equation (8) and securing the partial derivative of E_t with respect to b. Accordingly,

$$\frac{\partial E_t}{\partial b} = \frac{(1+r)^{a-b}}{b^2 r}\left[1 + b \log_e (1+r) - (1+r)^b\right]. \tag{8.5}$$

It may then be demonstrated that

$$\frac{\partial E_t}{\partial b} < 0 \quad \text{when} \quad \dot{r} > 0, \tag{8.6}$$

and

$$\frac{\partial E_t}{\partial b} > 0 \quad \text{when} \quad r < 0. \tag{8.7}$$

In words, where the rate of growth is positive, the shorter is the period of amortization, the greater is the ratio by which depreciation allowances will exceed replacement requirements. Accelerated amortization means increased depreciation charges (and, consequently, lower "profits" and profits taxes). Conversely, in a declining economy or firm, shortening the period of amortization increases the amount by which depreciation allowances fall short of replacement requirements.

The magnitude of the effect of acceleration of amortization is substantial. In an economy growing at a constant three per cent per annum rate with assets lasting ten years, *excess* depreciation (E_t) is raised from 14.6% to 23.1% of replacement requirements if amortization is accelerated from ten years to five years.[7] With twenty-year assets, acceleration of amortization to a five-year period would increase *excess* depreciation from 34.4% to 65.4% of replacement requirements. With thirty-year assets, *excess* depreciation, already at 58.6% of replacement requirements with unaccelerated amortization, is raised to 122.3% if amortization is speeded to a five-year period.[8]

V. *The Effect of Price Changes*

So far we have operated with the assumption that there is no change

[7] Five years has been the depreciation period which federal authorities have allowed to be used for tax purposes in much of the accelerated amortization during the second World War and again in the last two years.

[8] It may be noted that where the amortization period is *longer* than the useful life of assets, depreciation allowances may be less than replacement requirements, even in growing economies. In such cases an increased rate of growth would accentuate the deficiency of depreciation allowances vis-à-vis replacement requirements.

A fuller treatment of the subject of accelerated amortization, including consideration of relevant statistical data, may be found in the author's "Accelerated Amortization, Net Profits and Growth," in the November 1952 issue of the *Quarterly Journal of Economics.*

in the general level of prices. Our analysis should indicate that those who would unhesitatingly adduce price increases as proof that current depreciation allowances are insufficient to meet replacement requirements have ignored the effect of growth. Specifically, they have failed to consider that in our growing economy depreciation allowances would substantially exceed replacement requirements if there had been no price increases. Correct statement of the issue would present the problem of whether price increases have been sufficient to eliminate the excess of depreciation allowances which would exist with an unchanging price level. Let us apply our formal system to this problem.

Therefore, let us now assume that the general price level or, for our purposes, the price level of investment goods, changes at the constant rate i. Then, let us use r' to denote the constant rate of change of the monetary value of gross investment. Thus,

$$1 + r' = (1 + r)(1 + i). \tag{9}$$

Also using the prime symbol (′) to designate our other variables under conditions of changing prices, we find that depreciation charges may be expressed as

$$D_t' = I_t'\left[\frac{1 - (1 + r')^{-b}}{br'}\right], \tag{7.2}$$

while replacement requirements become,

$$R_t' = I_t'\left(\frac{1 + i}{1 + r'}\right)^a. \tag{5.1}$$

Then, dividing (7.2) by (5.1), and simplifying,

$$E_t' = \frac{(1 + r')^a - (1 + r')^{a-b}}{br'(1 + i)^a} - 1. \tag{8.8}$$

We may pause to deduce the unaccelerated amortization case which, although of some general economic interest, is mathematically merely a special case of the relationship expressed above. Thus under our new assumptions of price changes we may describe situation 1 (where $a = b$) by substituting a for b in (8.8). Then,

$$E_t' = \frac{(1 + r')^a}{ar'(1 + i)^a} - 1. \tag{8.9}$$

Equations (8.8) and (8.9) confirm clearly the common sense notion that price increases raise the cost of replacement requirements in rela-

tion to depreciation allowances. Put algebraically, it is apparent that, with the usual qualification that $r > -1$ but not equal to zero,

$$\frac{\partial E_t'}{\partial i} < 0. \tag{10}$$

However, it can also be made quite clear that the fact of an increase in prices is no proof that replacement requirements are not more than covered by depreciation allowances. It is indeed possible to state the function which indicates precisely how much prices would have to increase to warrant the charge that replacement requirements cannot be met by depreciation allowances. The price increase $\bar{\imath}$, which would just eliminate the excess of depreciation allowances may be calculated by setting $E_t' = 0$. It can then be shown that

$$= \left[\frac{(1 + r')^a - (1 + r')^{a-b}}{br'}\right]^{1/a} - 1. \tag{11}$$

It is a simple exercise to calculate the rate of increase of prices which would be necessary to wipe out the excess of depreciation allowances for any particular combination of our variables. For example, if $r' = 8\%$, $a = 20$ and $b = a$, substitution in (11) reveals that $\bar{\imath} = 0.042$. Unless prices increased at more than a 4.2% per annum rate depreciation allowances would continue to exceed replacement requirements.

Accelerated amortization would increase substantially the rate of increase of prices necessary to cancel the excess of depreciation allowances. To illustrate numerically, again, if $r = 8\%$, $a = 20$ and $b = 5$, then $\bar{\imath} = 1.051$. Thus, unless prices increased at more than a 5.1% per annum rate, depreciation allowances would exceed replacement requirements.

It is important to bear in mind that the rate of change of gross investment in monetary terms is itself a function of the rate of change of prices. Recall that

$$1 + r' = (1 + r)(1 + i). \tag{9}$$

Therefore, an increase in the rate of change of prices, i, which would raise replacement requirements, would also raise r' and hence raise depreciation allowances. However, the increase of depreciation allowances resulting from an increase in the rate of change of prices would be less than the increase in replacement requirements. We may note, in connection with the magnitudes which we have used for illustrative purposes, that the rate of increase of prices necessary to wipe out the excess of depreciation allowances is somewhat more than half of the rate of increase of gross investment in monetary terms. Another manner of expressing this relationship would be to state that the rate of increase of prices must be somewhat more than the rate of increase in the real

volume of gross investment in order for price increases to wipe out the excess of depreciation allowances over replacement requirements.[9]

VI. *Summary and Conclusions*

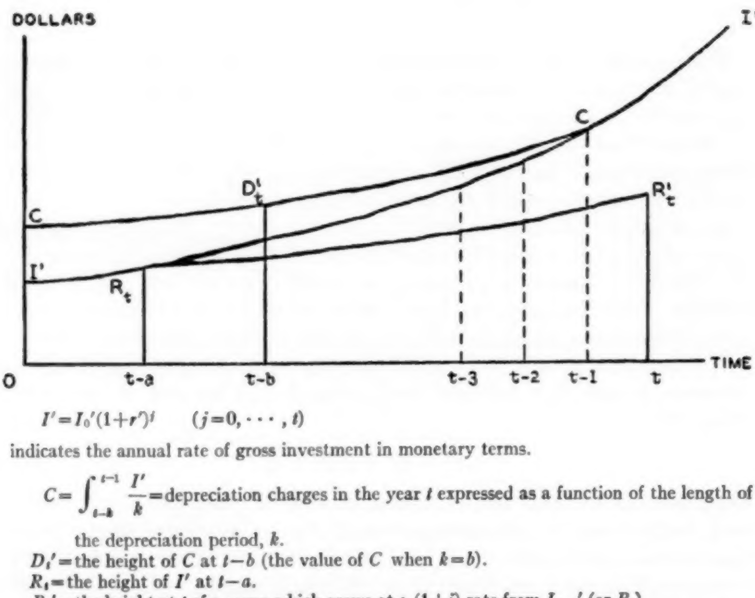
We may summarize our major findings as follows:

A. Abstracting from price changes

(1) Depreciation allowances exceed replacement requirements in growing economies or growing firms.

(2) The excess of depreciation allowances over replacement requirements varies positively with (a) the rate of growth of gross investment and (b) the length of life of assets.

[9] Those who prefer geometric presentations may find in the following diagram a convenient synthesis of the relationships which we have been considering.



$I' = I_0'(1+r')^j \qquad (j=0, \cdots, t)$

indicates the annual rate of gross investment in monetary terms.

$C = \int_{t-k}^{t-1} \frac{I'}{k}$ = depreciation charges in the year t expressed as a function of the length of the depreciation period, k.

D_t' = the height of C at $t-b$ (the value of C when $k=b$).

R_t = the height of I' at $t-a$.

R_t' = the height at t of a curve which grows at a $(1+i)$ rate from I_{t-a}' (or R_t).

It should be apparent that increasing the value of r' will tilt I' further upward and in turn raise C, thus increasing D_t'. If $b=a$, D_t' exceeds R_t by the distance between C and I' at $t-a$. On the other hand, if $a<b$ (for example, if $a<3$), R_t may exceed D_t'. One may observe generally that as long as I' rises over time, the slope of C is also positive, and decreasing the value of b must increase D_t'. Similarly, decreasing the value of a must increase R_t and, by thus raising the price increase curve which leads from R_t to R_t', must also increase R_t'. Finally, if price increases account for a sufficiently large proportion of the growth in investment, the curve leading from R_t to R_t' will be so close to the I' curve that R_t' will equal or exceed D_t'.

(3) The excess of depreciation allowances over replacement requirements varies negatively with the length of the period of amortization; accelerated amortization increases depreciation allowances.

B. When price changes are considered

(1) Increases in prices may not be sufficient to wipe out the excess of depreciation allowances over replacement requirements caused by growth in the real volume of investment.

(2) The extent of price increases necessary to cancel the effects of growth in the real volume of investment is a function of the rate of growth of investment (in monetary terms, which is a product of the real growth and the change in prices), the length of life of assets, and the period of amortization. Illustrative examples reveal that only when prices increase somewhat faster than real investment do replacement requirements approach the magnitude of depreciation allowances.

We may conclude that the phenomenon of growth places on shaky ground those who would argue that depreciation allowances are insufficient to meet replacement requirements. To the extent that replacement requirements may offer a criterion for the size of depreciation allowances a contrary hypothesis would appear appropriate. Perhaps depreciation allowances are too high and net profits, as well as net income and net investment, are understated by conventional accounting practices! And perhaps our traditional analyses of the distribution of "income" overlook, consequently, a substantial component of the social product which accrues to business enterprises in the form of generous depreciation allowances. Finally, our analysis may have suggested that in this entire area—as perhaps in others—economists must avoid explaining our developing world with models which ignore the phenomenon of growth.

THE SHAPE OF THE AVERAGE COST CURVE

By Wilford J. Eiteman and Glenn E. Guthrie*

I. *The Problem*

It has been argued that, when manufacturing is conducted with facilities designed by modern engineering techniques, the least cost point of a plant is located either at or near capacity output. By capacity is meant the greatest physical output possible in some relatively short period of time, such as an hour or a normal work day. The argument continues that, when modern engineers are successful, the short-run marginal cost curve for a product always lies below the average cost curve at all levels of operation short of capacity. The result is that the marginal cost curve cannot intersect the marginal revenue curve (1) if the average revenue curve is horizontal, or (2) if the average revenue curve is high and relatively elastic.[1] The foregoing thesis has been attacked from many quarters.[2]

The validity of much price analysis hinges upon the shape of the average cost curve, to which are related both the location of the least cost point and the shape of the marginal cost curve. To discover the shape of the average cost curves for actual companies is an exceedingly difficult task. Even if the shape of the curves could be ascertained, the existing controversy would continue. The reasoning of marginal price theory is valid if businessmen *believe* curves to be shaped as theorists assume, even though the curves are actually shaped as opponents contend; conversely, orthodox price theory is not valid if businessmen *believe* curves to be shaped so that their least cost points are at or near capacity, even though the curves really have the shape which conventional theorists maintain. Hence, marginal price theory stands or falls depending upon what businessmen think, because their short-run decisions to expand or to contract are based upon what they *believe* rather than upon what is actually true.

The easiest way to discover what businessmen think is to ask them.

* Wilford J. Eiteman is professor of finance and Glenn E. Guthrie is a graduate student at the University of Michigan.

[1] W. J. Eiteman, "Factors Determining the Location of the Least Cost Point," *Am. Econ. Rev.*, Dec. 1947, XXXVII, 910-18.

[2] The thesis has been censured by Mr. Bishop and Mr. Haines in two communications published in the September 1948 *Review*. A rejoinder to their criticisms will be found in the December 1948 *Review*.

Accordingly, a research foundation provided the authors with a small fund with which to finance a questionnaire study of what businessmen think concerning the shape of the average cost curves. The sole purpose of this paper is to describe the methods and to report the results of this study.

II. *Description of the Study*

In order to engage the cooperation of the right individual in each company, the paragraphs which follow appeared at the beginning of the questionnaire:

Shape of the Average Cost Curve

Why This Questionnaire Is Sent to You

Economists are currently engaged in a controversy regarding the shape of industry's "average cost curve." Their dispute has great theoretical importance, and indirectly some practical importance. Interestingly the argument relates to what businessmen think about the shape of the curve and not to the actual shape of the curve. This questionnaire is an attempt to discover what businessmen think. Your aid will be appreciated.

Who Should Answer the Questionnaire

Somewhere in your organization there is an individual or a group of individuals charged with the responsibility of deciding that production in the plant will be increased or decreased *tomorrow, next week, or next month.*[3] That individual or a representative of that group is the one whom we would like to answer this questionnaire. May we solicit your aid in seeing to it that the proper individual gets this questionnaire.

What Is Meant by the Average Cost Curve

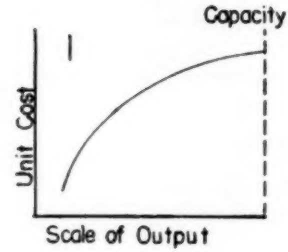
The average cost curve is a line on a graph which shows the cost per product at each possible scale of operation from the minimum to the maximum (*excluding all over-time work*). At each scale of operation the average cost is computed by dividing total costs of production allocated to a product by the quantity of the product produced. Obviously average cost varies as the scale of operations changes. The question is, How?

How to Answer the Questionnaire

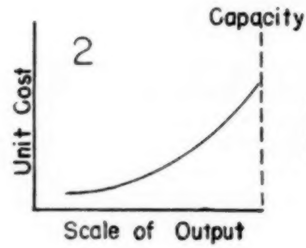
Eight small graphs follow. Will you kindly indicate the one which you think comes nearest to representing the cost situation for each of

[3] The italicized phrases automatically rule out long-run considerations without confusing a businessman with technical economic phraseology. The questionnaires were taken very seriously. Several companies called meetings of top management to discuss the subject and to formulate a memorandum to accompany the returned questionnaire.

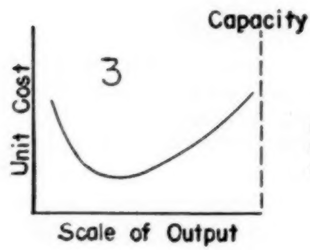
Curves	Interpretation



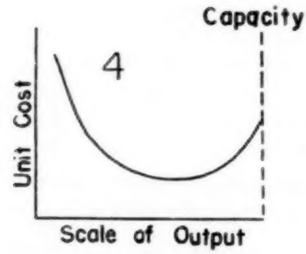
1. If you choose this curve you believe that your lowest cost point is at minimum output and that unit costs increase rapidly at a decreasing rate as output expands.



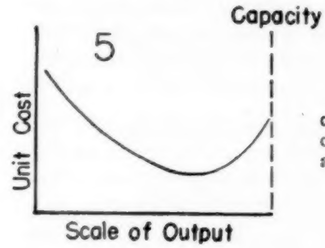
2. If you choose this curve you believe that your lowest cost point is at minimum output and that unit costs increase slowly at an increasing rate as output expands.



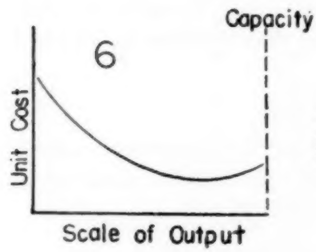
3. If you choose this curve you believe that unit costs are high at minimum output, that they decline *rapidly* to a least-cost point, and then that they rise until capacity output is reached.



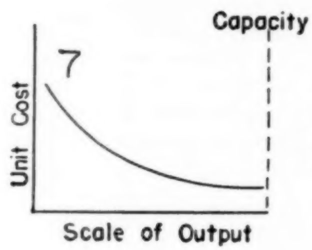
4. If you choose this curve you believe that unit costs are high at minimum output, that they decline to a least-cost point located about midway between minimum and maximum output and then rise.



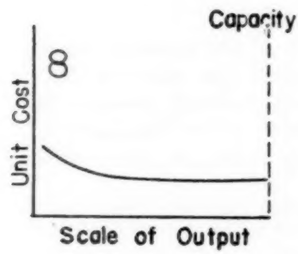
5. If you choose this curve you believe that unit costs are high at minimum output, that they decline *gradually* to a least-cost point *near* capacity, after which they rise sharply.



6. If you choose this curve you believe that unit costs are high at minimum output, that they decline gradually to a least-cost point near capacity, after which they rise slightly.



7. If you choose this curve you believe that unit costs are high at minimum output, and that they decline gradually to capacity at which point they are lowest.



8. If you choose this curve you believe that unit costs are the same at all scales of operation.

your principal products. Do not make a statistical or accounting investigation before indicating your answer because, as was previously explained, we are interested in what you think rather than in the actual shape of the curve.

The eight graphs mentioned above were so placed that all eight were visible without necessitating a turning of the page. The curves and the explanations which appeared beside them are on pages 834-35.

Questionnaires were sent to one thousand manufacturing companies located in forty-seven states. The companies chosen were manufacturers having more than 500 but less than 5,000 employees. It is important to note that the questionnaires were sent by mail. Personal interviews would have permitted the bias of the researcher to influence the thinking of the one being interviewed.

III. *Results of the Study*

Of the one thousand questionnaires sent, 366 replies were received from companies in thirty-two states.[5] Table I indicates the positions in the firms of the persons who provided the requested data.

TABLE I.—POSITION OF INDIVIDUALS WHO REPLIED

Position	Number of Replies
President	105
Vice-president (no function stated)	55
Treasurer or secretary-treasurer	60
Secretary	45
Controller	17
Accountant	15
Production manager	39
Miscellaneous other	30
Total	366

Some replies indicated that all the products of the company fell under one curve. Others listed numerous products but indicated that a single curve was applicable to all. Still others listed their products and indicated different curves as applicable to each. A few indicated that one curve was applicable under certain conditions but that another

[4] Immediately preceding the array of curves was the following note: "Please interpret capacity as meaning the maximum output possible without the use of overtime payments for labor."

[5] The largest number of replies came from Ohio (65), followed by Michigan (49), Massachusetts (33), Illinois (33), New York (29), Pennsylvania (26), Wisconsin (22), Connecticut (19), California (14), and Indiana (13, with lesser numbers from the other twenty-two states.

curve was more correct for the same product under other conditions. Therefore, several tabulations were necessary.

Of the 366 replies, 334 indicated one curve as applying to all the products of the company. Their choices are tabulated in Table II.

TABLE II.—CHOICE OF COST CURVE BY COMPANIES WITHOUT REFERENCE TO NUMBER OF PRODUCTS

Curve Indicated	Number of Companies
1	0
2	0
3	1
4	3
5	14
6	113
7	203
8	0
Total	334

The remaining thirty-two replies specified one curve as applying to one product and another curve as applying to another product. Table III indicates the choice of curves by products for all 366 questionnaires received. When a company did not specify products, it is included in this table as producing only one. Some products were reported under a specific curve subject to a qualification.[6] Replies of this nature are noted in the third column of the table.

Of the average cost curves included in the questionnaire, numbers 3, 4, and 5 can be taken as supporting conventional marginal price analy-

TABLE III.—COST CURVES CLASSIFIED BY PRODUCTS

Curve Number	Products Listed under Curve Indicated	Products Listed under Curve with Qualifications	Total Products Listed
1	0	0	0
2	0	1	1
3	4	1	5
4	12	3	15
5	18	24	42
6	245	136	381
7	402	234	636
8	0	2	2
Total	681	401	1,082

[6] Such as, for example, "Curve 7 provided we have two weeks notice of the step-up, otherwise curve 6."

sis. Curves 1, 2, 6, 7, and 8 do not support marginal theory. A compilation of the replies in terms of those for and those against conventional theory is given in Table IV.

TABLE IV.—COST CURVES GROUPED AS SUPPORTING OR NOT SUPPORTING MARGINAL ANALYSIS

Curves	By Companies		By Product	
	Supporting	Not Supporting	Supporting	Not Supporting
1		0		0
2		0		1
3	1		5	
4	3		15	
5	14		42	
6		113		381
7		203		636
8		0		2
Total	18	316	62	1,020

IV. *Conclusion*

The discussion above presents a factual report of the procedure applied and the results obtained from the study undertaken. The replies demonstrate a clear preference of businessmen for curves which do not offer great support to the argument of marginal theorists. If some of the personal comments of those who answered the questionnaires were to be repeated here, they would serve further to emphasize this conclusion. For example, after the questionnaires were returned, a letter was sent to each businessman explaining the reason for and the results of the study. The replies of two businessmen are given in the footnote.[7] Another operations manager reported that regardless of the shape of the curve, the least cost point is considered by him to be the capacity of his plant, since his efficiency is judged by his superiors entirely on the basis of his average costs as reported by the accounting department. Consequently, he would not under any circumstances push production beyond the least cost point.

If the beliefs of businessmen in general coincide with those included in this sample, it is obvious that short-run marginal price theory should be revised in the light of reality.

[7] "The amazing thing is that any sane economist could consider No. 3, No. 4 and No. 5 curves as representing business thinking. It looks as if some economists, assuming as a premise that business is not progressive, are trying to prove the premise by suggesting curves like Nos. 3, 4, and 5." A manufacturer of road building equipment wrote, "Even with the low efficiency and premium pay of overtime work, our unit costs would still decline with increased production since the absorption of fixed expenses would more than offset the added direct expenses incurred."

CORPORATE TAXATION AND METHODS OF CORPORATE FINANCING

By Donald C. Miller*

Among the many economic effects of our present federal corporate tax laws are those upon decisions as to the extent of capital expansion and the form that its financing will take. Under existing law there is pressure on any corporation with excess profits tax liability to obtain additional capital in order to increase its excess profits credit and thereby reduce or eliminate income subject to the 30 per cent excess profits tax. Such additions may be made either through equity or debt financing; and depending upon the cost of obtaining additional capital as shown by the contractual interest rate or equity capital cost rate, net tax saving is possible over a significant range of these rates even if no return is obtained by the use of these funds. Decisions to increase invested capital thus may be made in part or entirely because of tax considerations. This bias introduced by our tax system extends farther to affect the form that such financing will take. Corporate income tax laws have long encouraged debt as compared with equity financing, and this unneutrality is continued under the additional impact of excess profits taxation. This paper will consider the extent of the pressure for capital additions which is induced by tax considerations as well as the basis for the use of borrowed funds rather than equity capital for such expansion. Some of the technical aspects of the law affecting corporate borrowing are interpreted in order to determine the manner in which tax savings can arise and also the extent of such savings.

The most practical possibility of making an actual tax profit is in those cases where capital additions result in a reduction of both the corporate income tax and the excess profits tax. This is possible where borrowed funds qualify as invested capital additions, and this also explains the advantage of debt over equity financing. The interest expense of borrowing is used to reduce income subject to both the corporate income and excess profits tax, while with equity financing the dividend payments which may be necessary to attract additional capital are not allowed as a deduction. For this reason, allowances for borrowed capital and the derivation of tax saving under existing law are given special emphasis in this paper.

* The author is economist, Board of Governors of the Federal Reserve System. The views expressed in this article are those of the author and do not reflect those of the Board.

I. *Tax Saving through Use of Borrowed Capital*

In order to determine the effect of borrowed capital on corporate excess profits tax liability, it is necessary to differentiate between the two principal credit methods that may be used in arriving at the amount of a corporation's income subject to this tax. Both methods are designed to develop a credit or amount which is subtracted from excess profits net income in order to determine the excess income, if any, which is the excess profits tax base.[1] One method—the income method—is based on the average income record of the corporation during an arbitrary base period—the best three years out of the four-year 1946-49 period. The other—the invested capital method—is based on specified returns on capital investment. The rate of return allowed on this investment, before earnings are subject to the excess profits tax, varies from 12 to 8 per cent depending on the amount of invested capital. The total invested capital credit is the sum of 12 per cent of the first $5,000,000 of invested capital, 10 per cent of the second $5,000,000, and 8 per cent of all invested capital over $10,000,000. Under both the income and invested capital credit methods a 12 per cent return is allowed on all capital that can qualify as net new capital addition, and 75 per cent of any borrowed funds are included in computing this allowance for capital changes.

The effect of an increase in borrowing under these credit methods is shown in Table I. For comparative purposes Corporations A, B, and C are assumed to have corporate normal tax net incomes of $1,000,000 and excess profits tax credits of $800,000 before borrowing while Corporation D is a larger firm with a corresponding income and credit of $2,000,000 and $1,800,000 respectively. Corporation A is a non-borrowing corporation and affords comparison with the other corporations, each of which is assumed to borrow $1,000,000 at an interest rate of 3 per cent. Corporation B represents those firms qualifying for a 12 per cent rate of return on their borrowing and thus may be (1) a firm using the invested capital credit method and having less than $5,000,000 of capital (with a carry-back or carry-forward of an unused excess profits credit sufficient to give a total credit of $800,000 so that it may be compared directly with the other firms), (2) a firm having more than $5,000,000 of capital but one in which the borrowing qualifies as a net new capital addition, or (3) a firm using the income method in which the borrowed funds are a capital addition. Corpora-

[1] There is also a minimum credit, or exemption, of $25,000 which is available if the credit computed under the principal methods is less than $25,000. Another form of the invested capital credit method is the historical capital approach which may be used by some corporations. There are also various other credit allowances that may be used by firms qualifying for specific relief.

TABLE I.—TAX ADVANTAGES FROM BORROWING UNDER CORPORATE INCOME AND EXCESS PROFITS TAX LAWS

	Corporation A	Corporation B	Corporation C	Corporation D
A. TAX SAVING—CORPORATE INCOME TAX				
1. Corporate Income before Borrowing	$1,000,000	$1,000,000	$1,000,000	$2,000,000
2. *Less:* Interest Cost at 3%	—	30,000	30,000	30,000
3. Corporate Normal Tax Net Income	1,000,000	970,000	970,000	1,970,000
4. Tax Saving (52% of $30,000)	—	15,600	15,600	15,600
B. TAX SAVING—EXCESS PROFITS TAX				
Because of Interest Allowance				
5. Corporate Income before Borrowing	1,000,000	1,000,000	1,000,000	2,000,000
6. *Less:* 25% of Int. Cost of $30,000	—	7,500	7,500	7,500
7. EPT Net Income	1,000,000	992,500	992,500	1,992,500
8. Tax Saving (30% of $7,500)	—	2,250	2,250	2,250
Because of Additional Capital Credit from Loan				
9. EPT Net Income after Borrowing (#7)	1,000,000	992,500	992,500	1,992,500
10. *Less:* (a) EPT Credit (before Borrowing)	800,000	800,000	800,000	1,800,000
(b) Additional Credit from Loan	—	90,000	75,000	60,000
11. Total EPT Credit	800,000	890,000	875,000	1,860,000
12. Adjusted EPT Net Income (#9–#11)	200,000	102,500	117,500	132,500
13. EPT (30% of #12)	60,000	30,750	35,250	39,750
14. Tax Saving Due to Additional Credit [30% of #10(b)]	—	27,000	22,500	18,000
15. Total EPT Saving (#8 plus #14)	—	29,250	24,750	20,250
C. TOTAL TAX SAVING				
16. Tax Saving from Int. Exp. (#4 plus #8)	—	17,850	17,850	17,850
17. Tax Saving from Add'l. EPT Credit (#14)	—	27,000	22,500	18,000
18. Total Tax Saving	—	44,850	40,350	35,850
19. *Less:* Int. Cost of Borrowing	—	30,000	30,000	30,000
20. Net Tax Profit from Borrowing	—	14,850	10,350	5,850

tions C and D represent firms using the invested capital credit method whose invested capital is greater than $5,000,000 and $10,000,000 respectively and whose borrowings do *not* qualify as capital additions and therefore receive only 10 per cent and 8 per cent allowances respectively. It should be noted that the possibility of a net tax profit depends upon both the interest expense allowances and excess profits credit allowances that may be derived from the additional borrowing.

Deductibility of Interest Expense

The net cost of borrowing is affected by interest expense allowances found in both the excess profits and corporate income tax laws. The entire interest cost of borrowing may be used to reduce corporate normal tax net income. If a corporation is subject to the marginal rate of 52 per cent, its income tax will thus be decreased by over half the interest expense. This represents one of the long-standing features of corporation income taxation in this country influencing the use of debt or equity financing.

Table I (Part B, #8) shows that additional tax saving results because one-fourth of interest expense is also exempt from the 30 per cent excess profits tax. This interest cost allowance in effect applies to that part of borrowing not contained in the credit. Under the invested capital credit method, regardless of the size of the borrower and regardless of whether or not the borrowing qualifies as capital additions, the two factors involving deductibility of interest expense result in decreased tax bases as indicated. This is also the case for the income method if the borrowed funds represent an increase in capital which is included in the credit base.

Considering just the tax saving resulting from the deductibility of interest expense, the cost of borrowing is equal to the interest expense minus 52 per cent of the interest expense and 30 per cent of one-fourth of the interest expense. This is applicable for all corporations using the invested capital credit or for those cases under the income credit method where the borrowed funds represent net capital additions. The cost of borrowing (C_1) considering only the deductibility of interest, where A is the expense, is as follows:

$$
\begin{aligned}
(1)\quad C_1 &= A - (.52A + .075A) \\
&= A - .595A \\
&= .405A
\end{aligned}
$$

Thus in these cases the net cost of borrowing when only the tax provisions concerning interest expense are considered is only 40 per cent of the interest cost.

If *none* of the borrowing under the income credit method qualifies as net capital addition, all interest expense escapes both the corporate and excess profits taxes at their combined marginal rate of 82 per cent; that is, the net cost of borrowing is only 18 per cent of the interest cost. Under the income credit method for corporations that have only a part of their total borrowing qualifying as net capital addition, the net cost of borrowing (considering just the effect of interest cost allowances)

will fall between 18 and 40 per cent, depending on the portion of total borrowing that represents a net increase in borrowed capital.[2]

Borrowing and the Excess Profits Credit

Actual tax profits from borrowing are possible, however, only when a part of borrowing enters into the excess profits credit which serves to reduce the excess profits tax base. If the invested capital method of computing the credit is used, 75 per cent of borrowed funds are included in all cases; but if the income credit method is used, borrowings enter into the credit only if they can qualify as net capital additions. Thus a corporation can have borrowed funds in the taxable year but no allowance of these funds in the income credit if the amount is not above the borrowing of the base reference period. If there has been a capital reduction since the base period, the excess profits credit must be correspondingly reduced.[3] When this possibility is considered, the low net cost of borrowing—mentioned above for some cases as 18 per cent of the interest expense when only the deductibility of interest expense was taken into account—may be greatly modified by the effect of the credit.

If the invested capital credit method is used, the rate of return allowed in computing the credit also depends in many cases upon whether or not the borrowing qualifies as net new capital addition.[4] If it can so qualify, a 12 per cent rate of return on 75 per cent of the borrowed capital is allowed in computing the credit.[5] In determining whether or not the borrowing and other capital changes qualify as net new capital, three factors are considered: (1) a comparison of equity capital at the beginning of the taxable year is made with the amount as of January 1,

[2] If D is the net increase in borrowed capital (the excess of the average daily amount of borrowed capital for the taxable year over the borrowed capital at the beginning of the first taxable year—January 1, 1950, for calendar year corporations) and E is the average daily amount of borrowed capital for the taxable year, the net cost of borrowing (C_1) is determined as follows:

$$C_1 = A - .52A + \left(.30A - \frac{.30AD}{E}\right)$$
$$= .48A - .30A + \frac{.30AD}{E}$$
$$= .18A + \frac{.30AD}{E}$$

[3] Thus this is a factor tending to inhibit the repayment of borrowing.

[4] The methods used to determine "new capital addition" under the invested capital method and "capital addition" under the income method are similar.

[5] Except in those cases where the historical invested capital credit is used. In these cases the credit from all borrowing depends on the invested-capital size classification of the corporation.

1950 (for calendar year corporate returns); (2) the net amounts of money and property paid in for stock, or paid in as surplus, or as a contribution to capital, are computed for the taxable year; and (3) a comparison is made of the amount of borrowing as of January 1, 1950, with the average amount of borrowing for the taxable year. These comparisons are used to derive the net new capital additions or reductions. In an expanding economy much borrowing will qualify as net new capital addition and thus for the 12 per cent rate allowance regardless of the size of the firm.

For corporations using the invested capital method, all borrowing by those with less than $5,000,000 invested capital, and all borrowing qualifying as net new capital additions for larger firms, receives a 12 per cent rate of return on 75 per cent of the borrowing. The cost of borrowing (C_2) where A is the interest expense and B is the amount of qualified borrowing, is determined as follows:

$$\begin{aligned}(2)\quad C_2 &= A - .30\,(.12 \times .75B)\\ &= A - .30\,(.09B)\\ &= A - .027B\end{aligned}$$

For the larger corporations using the invested capital method, borrowing that does not meet the new capital addition requirements will receive less preferential treatment, and the cost of borrowing at the higher interest rates, or the tax saving at the lower interest rates, can be determined as follows for the two largest size classifications respectively:

$$(3)\quad C_2 = A - .0225B$$
$$(4)\quad C_2 = A - .018B$$

In these cases the only difference from formula (2) is the lower rates of return of 10 and 8 per cent used in formulas (3) and (4) respectively.

Under the income method all capital additions also are allowed the 12 per cent return. If the borrowing does not qualify as such under this method, no credit allowance is made for whatever borrowings exist in the taxable year; and the credit is decreased for any capital reductions.

Total Tax Profits from Borrowing[6]

If all of these factors which result in some tax reduction (or lower effective interest rates) are considered, the total net tax cost of borrowing or net tax profit (C) for many firms may be obtained by combining formulas (1) and (2).[7] Thus the expense of borrowed funds minus

[6] In determining tax saving or cost it is assumed that the borrowed funds are not invested and also that all borrowing is "incurred in good faith for purposes of the business" as specified in Section 439, Internal Revenue Code.

[7] For some of the larger corporations formula (1) and formulas (3) or (4) may be applicable. For corporations using the income credit base, the combination of formulas ap-

the tax reduction factors resulting from excess profits credit allowances and interest expense allowances equals the net tax profit of borrowing if the result is negative or the net cost if it is positive:

$$\begin{aligned}(5)\quad C &= A - (.027B + .595A)\\ &= .405A - .027B\end{aligned}$$

If the contractual interest rate is given, formula (5) may be reduced to still simpler terms—all in terms of B, the amount of borrowing. If, for example, a rate of 3 per cent is assumed—the current prime rate for corporate borrowing at money center banks—an effective interest rate is derived which when applied against the amount of borrowing (B) gives the net tax saving or cost:

$$\begin{aligned}(6)\quad C &= .405\,(.03B) - .027B\\ &= .01215B - .027B\\ &= -.01485B\end{aligned}$$

With the contractual interest rate of 3 per cent, the effective interest rate (on borrowing which qualifies as net new capital addition for a corporation subject to a marginal corporate rate of 52 per cent and an excess profits rate of 30 per cent) will be negative and about 1.5 per cent. Thus borrowing will not be a net cost to the corporation but will yield a tax profit.

Table II shows the gross tax saving rates that may be obtained on borrowed capital at specified rates of interest under the conditions mentioned above for firms using the invested capital credit or the income credit if the borrowing qualifies as a capital addition. The gross tax saving rates (G) under the different rates of return are obtained as follows where X is the contractual interest rate:

$$\begin{aligned}&(7)\quad G = .595X + .027 &&(12\%\text{ rate of return})\\ &(8)\quad G = .595X + .0225 &&(10\%\text{ rate of return})\\ &(9)\quad G = .595X + .018 &&(\ 8\%\text{ rate of return})\end{aligned}$$

It will be noted that these gross tax rates are derived from the aforementioned tax-saving provisions with formula (7) accounting for smaller corporations or for any net new capital while formulas (8) and (9) are applicable to the larger corporate-size groups. Table II also shows the break-even interest rates on borrowing for the three different rates of return allowed on borrowed capital.

These formulas may be used to estimate the tax effect of borrowing by corporations which meet the qualifications specified for each formula. Such computations in effect estimate what the tax would have

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plicable will depend on the relation between borrowing in the taxable year and in the base period. If the borrowing can qualify as a capital addition, formula (5) is applicable.

TABLE II.—TAX SAVING RATES ON BORROWED CAPITAL FOR VARIOUS CONTRACTUAL RATES OF INTEREST UNDER 1952 EXCESS PROFITS TAX RATES[a]

Contractual Interest Rate (per cent)	Gross Tax Saving Rates[b]		
	Percentage Returns Allowed Borrowed Capital		
	12[c]	10	8
		(Per cent)	
1	3.295	2.845	2.395
$1\frac{1}{2}$	3.592	3.142	2.692
$1\frac{3}{4}$	3.741	3.291	2.841
2	3.890	3.440	2.990
$2\frac{1}{2}$	4.187	3.737	3.287
3	4.485	4.035	3.585
$3\frac{1}{2}$	4.782	4.332	3.882
4	5.080	4.630	4.180
4.444	—	—	4.444
$4\frac{1}{2}$	5.377	4.927	4.477
5	5.675	5.225	4.775
$5\frac{1}{2}$	5.972	5.522	5.072
5.555	—	5.555	—
6	6.270	5.820	5.370
$6\frac{1}{2}$	6.567	6.117	5.667
6.666	6.666	—	—
7	6.865	6.415	5.965
$7\frac{1}{2}$	7.162	6.712	6.262
8	7.460	7.010	6.560

[a] Effective interest rates may be obtained by subtracting the gross tax saving rates from the corresponding contractual interest rates. These data apply only to firms that may fully utilize their borrowings for excess profits tax purposes.

[b] Reduction in tax liability as a result of borrowing, expressed as a ratio to the amount of borrowing.

[c] The tax saving rates shown in this column are applicable to all corporations if the borrowed capital qualifies as a net new capital addition.

been if the corporations had not borrowed and compare this with the actual tax paid in order to determine tax reductions resulting from borrowing.

In those cases where the excess profits credit exceeds excess profits income, *all* of any borrowing that may have been done does not involve tax saving advantages such as those shown in formula (6), for example. Any "excess" borrowing will give no tax saving benefits through the excess profits credit and therefore will always result in some net cost. This cost must be subtracted from any tax savings obtained by applying formula (6) to total borrowing.[8]

[8] In a case where there would have been some excess profits tax liability if there had been no borrowing, the amount of the "excess" borrowing effect contained in formula (6) is removed by subtracting the tax value of the excess credit where L is the excess profits credit and Y is excess profits income.

$$C_s = -[.015B - .20\,(L - Y)]$$

Two other factors which will affect the amount of tax saving in some cases are the possibility of a carry-back or carry-forward of unused excess profits credits and the possibility that some corporations will be subject to the ceiling rate of 18 per cent rather than the 30 per cent rate. If a corporation's total excess profits tax liabilities are so high that the ceiling rate is applicable, the above formulas for determining tax saving do not apply. As long as a corporation remains subject to the ceiling rate, the only tax reduction resulting from borrowing will be that coming from the allowable interest cost deductions.[9] The formulas shown, however, will apply to most of the cases involving borrowing, and formula (5) will apply to the situations involving borrowing that qualifies as a capital addition.

Relative Strength of Tax Saving Features

The relationship illustrated in formula (6) is shown in Chart 1 on line J. This chart also shows effective interest rates (net tax profit or net tax cost) of various contractual interest rates and the relative contributions of the tax saving features. The chart is based on the assumption that the borrowing will qualify for a 12 per cent rate of return and thus shows that at a contractual interest rate of about 6.7 per cent the cost of borrowing would be offset by tax saving under existing law—*i.e.*, the effective interest rate will be zero.

It has been shown that tax savings through borrowing arise both because of the effect of the borrowing on the excess profits credit and because the interest expense arising from the borrowing also reduces the tax base. The relative strength of these two tax saving features depends on the level of the contractual interest rates involved. The expansion of the credit base—2.7 per cent of borrowing for firms using the invested capital credit or income credit if the borrowing is a capital addition [see formulas (5) and (6)]—will be the same regardless of high or low interest rates. The tax saving from the deductibility of interest expense, of course, depends on the contractual interest rate. Formula (7) indicates that about 60 per cent of the interest cost may be saved under present tax laws affecting interest deductibility. Thus there always remains a net interest expense of about 40 per cent of the contractual interest cost. This is more than offset by the credit al-

[9] For such corporations subject to the ceiling rate the net cost of borrowed funds is determined as follows:

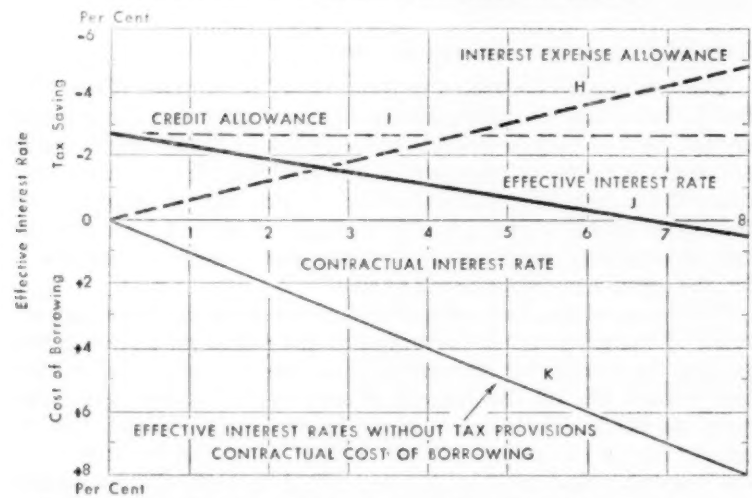
$$\begin{aligned} C &= A - [.18\,(.25A) + .52A] \\ &= A - (.045A + .52A) \\ &= .435A \end{aligned}$$

If the interest rate is 3 per cent, the net cost of borrowed funds would be .435 (.03), or .0131 per cent of the amount borrowed.

lowance at lower interest rates—*i.e.*, there is a net tax profit. This net expense grows as interest rates rise, however, and, as Chart 1 and Table II show, eventually offsets the saving effects of the constant credit allowance.

For any given contractual interest rate the effective rate (net tax profit or net tax cost of borrowing) shown by line J in the chart may be determined by taking the algebraic sum of the applicable points on lines H, I, and K. At low rates of interest the credit allowance resulting from borrowing is a more important tax-saving feature than the interest

CHART 1. EXCESS PROFITS TAX CREDIT ALLOWANCES AND EFFECTIVE INTEREST RATES FOR NET NEW BORROWING AT SPECIFIED CONTRACTUAL INTEREST RATES[a]



[a] For corporations allowed a 12 per cent return on borrowed capital.

expense allowance. The chart shows that as interest rates increase the interest expense (line K) eventually is sufficient to offset all tax saving features, and there is a net borrowing cost.

Other tax provisions have been proposed which would alter the patterns of the interest expense allowance and the excess profits credit allowance and make borrowing more or less attractive. Treasury recommendations and the Ways and Means Committee proposal for the Excess Profits Act of 1950 would have given much more weight to the interest expense allowance by basing the credit allowance on the interest cost as well as allowing complete deduction of this cost from both the corporate and the excess profits tax base. The total al-

lowance on this basis would be solely and directly dependent on the interest cost but would not be sufficient at any interest rate to give a net tax profit. Under existing law the possibility of large tax profits through the use of borrowed funds at very low interest rates arises from the effect of the credit based on the amount rather than the cost of borrowing. Under the Treasury plan the effective interest rate would have increased more gradually than under existing law because of the cost-offsetting effect of the more liberal interest cost allowances at the higher interest rates. If the interest cost allowance under the Treasury plan were made sufficiently high, net tax profits would be possible. In this case, the profit would increase at higher interest rates in contrast to the present law's effect.[10] The line on the chart showing the effective interest rate would have a positive slope in such a case rather than the negative slope shown for the existing law.

II. *Tax Saving through Use of Equity Capital*

Treatment of equity capital changes will be brief since many of the provisions of the law determining tax saving by means of increased borrowing apply also to increases in equity capital.

The gross tax saving features of increases in the equity capital of a corporation are confined to the benefits obtained from the expansion of the excess profits credit. An increase in the credit base is allowed equal to 12 per cent of the total increase in equity capital. Thus the gross tax saving resulting from such increases will equal 3.6 per cent of the increase in equity capital.[11] The net tax saving possibilities, however, will vary with the manner and conditions under which additional equity capital is obtained.[12] If equity capital can be obtained under conditions

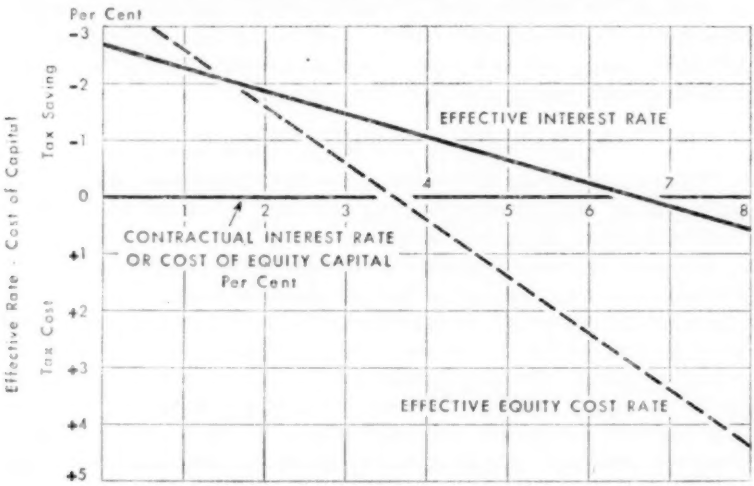
[10] This would be the case if, for example, full allowance for interest cost were also allowed in the excess profits credit.

[11] Twelve per cent of the capital increase escapes the 30 per cent excess profits tax. This rate is based solely on the allowances provided in the tax law.

[12] On new stock the gross tax savings rate minus the gross cost rate will equal the net tax savings rate. For this calculation, the gross cost rate on the new stock to the old stockholders is measured by the net earnings rate on the new issue which allows for both the dividends and undistributed profits going to the new stockholders instead of to the old. If the net earnings rate, so measured, is less than 3.6 per cent, the issuance of new stock will result in tax saving; but since few corporations can issue stock at such a low net earnings rate, the issuance of stock for tax purposes alone is likely to be limited. If all net earnings are paid out in dividends, then the dividend rate is the significant cost rate and is comparable to the contractual interest rate of borrowing; or if new capital is obtained by preferred stock, its dividend rate is the significant cost rate. If capital is increased through additions to surplus, there are no similar offsetting cost factors; and the net tax savings rate equals the gross tax savings rate. (This explains why many corporations have shifted their dividend dates at the start of the taxable year so that more of earnings would qualify as surplus.)

such that the gross cost rate of the new capital is less than 3.6 per cent, net tax saving from equity capital additions in this form is also possible.[13] Chart 2 shows the net tax saving rates at different equity cost rates, and thus affords a comparison of the net tax saving or net tax cost possibilities of expanding invested capital through debt or equity financing. The lines showing the effective interest and equity capital cost rates may be interpreted as follows: even if it is assumed that for obtaining a given capital addition the contractual interest rate on borrowed

CHART 2. EFFECTIVE RATES FOR COST OF NEW DEBT OR EQUITY CAPITAL



money is the same as gross cost rate on equity funds, borrowing is a more profitable operation, tax-wise, than equity financing at all rates except the very lowest. At 3 per cent, for example, net tax saving for equity financing and borrowing are .6 and 1.5 per cent respectively. At 1 per cent, net tax saving through the use of equity financing is larger because the smaller excess profits credit allowance resulting from borrowing (only three-fourths of borrowing is considered invested capital) is not sufficiently increased by interest expense allowances to offset the full credit allowance given to equity capital. Over the significant range

[13] For comparative purposes the cost rate on equity capital should also include any differential between the cost of flotation of new stock issues and the non-interest costs of borrowing. Allowance should also be made for the difficulties that some corporations may have of selling new stock where the market valuation is substantially below book value, and where the sale of new stock results in dilution of the equity of existing stockholders.

of rates, however, there is a decided tax advantage in the use of borrowed funds.[14]

III. *Relative Tax Advantages*

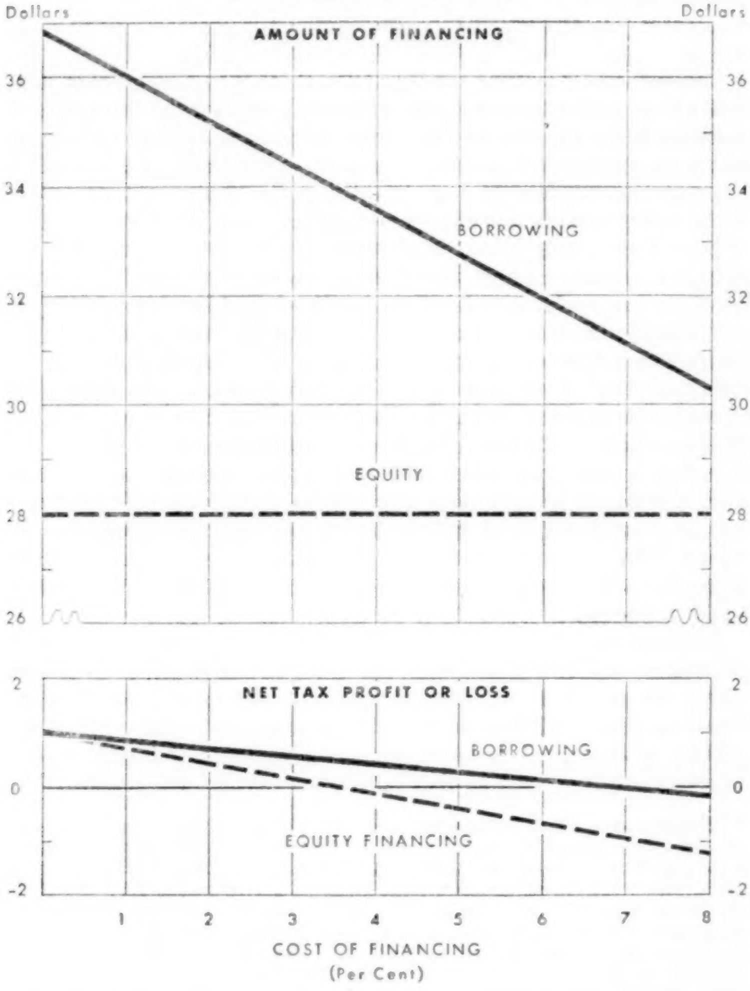
Although under existing tax legislation there is an advantage in debt rather than equity financing, the differential between the two forms of financing is not as great for the significant range of interest and equity cost rates as would be the case without the excess profits tax but with a corporate income tax. At interest rates under 12 per cent, the effect of the excess profits tax is to wipe out part of the differential advantage of borrowing arising from the corporate income tax laws because the amount of interest expense allowed as a deduction from the income subject to excess profits taxation (one-fourth of total interest expense) is not sufficient to offset the fact that there is only a fractional credit allowance on borrowed capital as compared to complete allowance for equity capital.[15] It should be noted, however, that it is only under *both* corporate income and excess profits taxation that there is a possibility of net tax profit. Although the differential advantage of debt over equity financing is narrowed under existing corporate taxation over the significant range of interest rates, this differential advantage is nevertheless substantial and is of greater importance than any advantage obtained under just a corporate income tax since under present laws debt financing is much more likely to involve an actual tax profit than is equity financing.

Pressure for increasing invested capital will continue as long as a corporation has an excess profits tax liability, and it will be profitable within the rate limits specified above to borrow or sell stock (or increase surplus) until this liability is eliminated. Once excess profits tax liability is eliminated, however, the tax advantages of further capital increases are decreased so that no net tax savings are possible. The

[14] If borrowed capital can be obtained at lower cost rates than equity capital, there are advantages in borrowing to get a given amount of new capital in addition to those shown in Chart 2. With the exception of additions to surplus, the possibility of obtaining equity capital (or capital through preferred stock issues) at a gross cost rate low enough to give net tax savings is small, whereas this is not the case with borrowing. The most attractive tax saving device, however, lies in additions to surplus where the corporation has no external costs to face. In such cases net tax saving from these increases in equity capital is 3.6 per cent. To the extent that tax considerations affect corporate dividend policy, the tax saving possibilities of retained earnings would tend to be an important influence on corporate decisions. This would be true especially in those cases where corporations viewed the excess profits tax as a temporary tax measure.

[15] The difference in the credit allowance between equity and debt financing is equal to 3 per cent of the principal. The excess profits tax interest allowance is one-fourth of the interest expense and would therefore equal the credit difference at a 12 per cent interest rate.

CHART 3. FINANCING NECESSARY TO ELIMINATE ONE DOLLAR OF EXCESS PROFITS TAX AND THE PROFIT OR COST INVOLVED



amount of borrowing or equity financing (or sale of preferred stock) necessary to eliminate a given amount of excess profits tax liability depends upon the *gross* excess profits tax effect of these activities. Whether or not it is profitable to use these financing techniques at all depends on their total *net* saving effect. Thus it will be profitable to

borrow at rates of interest of less than 6.7 per cent or to use equity financing at rates of less than 3.6 per cent. Within these limits the amount of borrowing required to eliminate a given amount of excess profits tax liability varies with the interest cost of the borrowing because a part of interest expense enters into gross excess profits tax saving.

Gross excess profits tax saving under equity financing depends only on the amount of the capital addition and is not influenced by the cost of such additions. The gross excess profits tax saving rate for equity financing is thus 3.6 per cent which means that $28 of capital addition is necessary to eliminate each dollar of excess profits tax liability where the credit is computed as a 12 per cent return on the added capital. The gross excess profits tax saving rate for borrowed capital is lower than 3.6 per cent for all interest rates under 12 per cent; and thus the amount of borrowing required to eliminate each dollar of excess profits tax liability will be greater than $28 and will also vary with the contractual interest rate. Although the amount of capital addition required to obtain a given amount of excess profits tax saving is less for equity financing, the *net* tax profits possibilities are greater and spread over a wider range of interest rates for corporate borrowing.

The relationships mentioned above are shown in Chart 3. This chart shows the larger amounts of borrowing required at given interest rates to eliminate each dollar of excess profits tax liability as compared with the amount of equity financing required to eliminate the same liability. The net tax profit lines, however, show the greater profitability over a wider range of rates of borrowing over equity financing. Under the latter method the pressure for continued expansion of invested capital disappears more rapidly as excess profits tax liability is eliminated with smaller capital additions but also with less net tax saving. The chart also shows that, at any of the interest rates under 6.7 per cent, after $28 of borrowing has taken place there will still be tax pressure for continued borrowing since some excess profits tax liability will remain, and there is a possibility of additional net tax saving.

IV. *Conclusion*

There are features of our existing corporate tax structure that result in pressure for capital expansion. There are also unneutralities in corporate tax law which heavily influence the method of financing toward the use of borrowed funds. The potential amount of borrowing required to eliminate corporate excess profits tax liability is very large because, as shown in Chart 3, roughly 31 to 36 dollars of borrowing is necessary to eliminate each dollar of excess profits tax liability. Furthermore, reduction of *existing* corporate debt is discouraged, for companies in the

excess profits bracket, since decreases in borrowing have roughly the opposite tax implications as those indicated for increased borrowing.

In a period of defense preparation in which our tax system supposedly functions to offset inflationary pressures, these features of corporate taxation provide additional expansionary forces in addition to modifying the financial structure of the corporations. The analysis in this paper has been based on the assumption that the capital additions of corporations with excess profits tax liability could be held idle and net gains would still be obtained. It is more likely, however, that additional funds obtained because of tax considerations will be used and thus will be reflected in additional demand for goods and services.

PITFALLS IN MATHEMATICAL MODEL-BUILDING

By ARNOLD C. HARBERGER*

I. *Introduction*

Dr. Stuvel's recent book on *The Exchange Stability Problem*[1] is an attempt to extend our knowledge of the conditions of stability in the foreign exchange market. The attempt is, by and large, a vain one. I would be tempted to discharge my duties as a reviewer with that remark, if I did not feel that to do so would be unfair to both Stuvel and my readers. Stuvel's errors are not the gross mistakes of an amateur, nor are they the ghosts of dragons long since buried. Rather, they are the subtle pitfalls that await us at the frontier of economic theorizing—in the great new domain of mathematical model-building. The lessons to be learned from studying them ramify far beyond the narrow confines of Stuvel's subject-matter, and should be of interest to model-builders generally, as well as to those who participate passively, but not uncritically, in model-building adventures.

Stuvel is to be applauded for the way in which he begins his study. The reader is taken slowly and carefully through definitions of concepts, a review of the literature, a justification of the mathematical treatment used, and finally through an equation-by-equation analysis of Stuvel's general model. The model is disarmingly simple. The country in question is assumed to be small, so that changes in its demand cannot significantly influence either the foreign-currency price of its imports or the level of income in the rest of the world. It is assumed to make only one final product (y), in the production of which imports and labor enter as the only variable factors. Demand for each of these factors is taken to depend on its relative price and on the level of output. The supply of imports is perfectly elastic, but the supply of labor is taken to depend on the real wage and (if laborers are subject to a money illusion) on the absolute level of the price of the final product. Real national income is the total output of the final product less the amount of that product which would be necessary, at current prices, to pay for the imports used up in its production. Demand for the final product is the sum of

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[1] G. Stuvel, *The Exchange Stability Problem* (Leiden: H. E. Stenfert Kroese's Uitgevers-Maatschappij N. V., 1950). Republished in the United States by Augustus M. Kelley (New York, 1951), pp. viii, 242.

home demand and foreign demand. Foreign demand for y is assumed to depend on its foreign currency price (other prices abroad being assumed constant), while home demand is taken to depend on real national income and (if home purchasers are subject to a money illusion) on the absolute level of the final-product price. Relative prices do not influence home demand, since there is only one final good available to home purchasers.

Stuvel makes a good case for the heroic assumptions involved in each equation of his model, and his case is reinforced by the fact that even after all the simplifying assumptions have been made, the austere structure that remains is still a pretty unwieldy engine. He is quite right, I believe, in concluding that it would be folly to try, by verbal analysis alone, to trace the effects of a change in the exchange rate on all the variables of the system. Yet all these effects must be traced, either implicitly or explicitly, before one can see whether devaluation will improve or deteriorate the trade balance.

What a delight it is, when you're faced with a task like Stuvel's, to know that you can call to your aid the powerful tool of differential calculus! Set down your assumptions in explicit mathematical form, assure yourself that your model is mathematically complete, differentiate the model with respect to the exchange rate, and read off the answer. In Stuvel's case, however, the answer isn't very easy to read: the expression for the change in the trade balance consequent on a change in the exchange rate is an impressive jumble of coefficients—a quotient with both numerator and denominator stretching all the way across page 162, with three orders of brackets and numerous sub-quotients in each. It is the kind of expression which may be useful in that econometrician's paradise where the numerical values of all coefficients are known—but to earthbound economists it is not of much help. We can't use it "practically," since our estimates of coefficients are much too shaky to stand that much compounding. And we can't use it "theoretically," either, for by itself it contributes to our intuitive understanding of how the economy works only the assurance that "it's very complicated."

Stuvel detects the bankruptcy of his initial "general" solution, and proceeds to derive simpler expressions for the effects of devaluation on the trade balance, by dealing, in turn, with a number of special cases of his general model. What happens when money illusion is absent? When the labor force is assumed to be always fully employed? When there is widespread unemployment and the money wage is rigid? The answers to these and similar questions form the bulk of the last chapter of the book. Unfortunately, these answers are obtained in the same way as the "general" answer—simply by observing the sign of the derivative of the trade balance with respect to the exchange rate.

I say unfortunately because what leads Stuvel astray is precisely his faith in the mathematical process by which he obtains his answers. He has extended the old maxim that "figures don't lie" into the realm of mathematical models—and it should not be surprising that in this new realm it is just as much a half-truth as it was in the old. It is eminently true that the conclusions derived from a mathematical model are implied by the assumptions. But this statement obviously does not guarantee that the assumptions are appropriate—and there are at least two main ways in which inappropriate assumptions may slip in, unnoticed, to vitiate our conclusions. The first I shall call the fallacy of completeness, and the second the problem of translation. I shall deal with them in turn, pointing out how Stuvel has become their prey.

II. *The Fallacy of Completeness*

The really knotty problems that we face, as economists, take their root in the fact that the wcrld we are trying to explain is too complex to be thoroughly comprehended. Yet we would not admit that the effects we observe are without causes—if we did, we would probably soon cease to be economists. We thus must have in mind a picture of the economic world as a system of determinate relations—relations which may change wildly and unpredictably over time, but which at any one time are adequate to determine what we then observe. It is but a small step to view this system of relations as a grandiose system of equations, whose farthest reaches we cannot fathom, but which we nevertheless assume to exist.

Obviously, if we cannot comprehend this "total" system, we cannot solve it. We earn our bread and butter not by contemplating this fruitless over-all task, but by breaking out of the "total" system small, manageable subsystems which are (within limits and usually on very high levels of abstraction) complete in themselves. We here rely on the fact that all the variables of a mathematically "complete" subsystem are determined within the subsystem itself—so long as all the equations of the subsystem apply; what happens outside of it has no influence on the variables within. To take a simple, though implausible example, suppose that it was felt that the demand for meat depended only on its price, and the supply likewise. The equating of demand and supply would determine both the price and the quantity of meat—the only variables in the subsystem. It is therefore "complete."

Yet, as every undergraduate knows, the interesting questions of supply and demand arise only when this simple subsystem is modified. What happens when price control is invoked? The supply and demand equations remain the same, but the relation equating the two disappears, and is replaced by the imposed price from the outside. What happens when an excise tax is imposed? Again the behavior relations do not

change, but price to the seller and price to the buyer become different things, and the equilibrium level of output changes.

In the above example, it is obvious that the answers to a number of relevant questions require the modification of the initial system—in spite of the fact that it is "complete." In Stuvel's case the necessity is much less obvious, but none the less real. His equations are individually highly plausible, and, when thrown together, are sufficient to determine all his unknowns.[2] In particular, they are sufficient to determine the response of the trade balance to a change in the exchange rate. Here, it seems, we have a case unlike the supply-and-demand example given above—for the "interesting" question can be answered without breaking out of the confines of the original "complete" model.

Still, one's suspicion grows as one scrutinizes Stuvel's model. Since there is only one final product in the system, its price plays a dual rôle. It is, by hypothesis, the price of a single commodity, which suggests that it will be determined by the forces of supply and demand in the market for that commodity. But it is at the same time the general price level, which suggests that it will be related to the quantity of money, the rate of interest, and the type of monetary and fiscal policy pursued. Stuvel does not recognize the potential contradiction involved here. In fact, he does not even mention the amount of money or the rate of interest in his analysis, nor does he ever state what kind of monetary or fiscal policy he assumes. To what extent may we interpret his results as applying regardless of the monetary framework assumed? We are not told, but there are clearly severe limits to such applicability. One may attempt to justify Stuvel's neglect of these matters by inferring that what is neglected is assumed constant. But if we assume the supply of money to be constant, we cannot also assume the interest rate to be constant, for the disturbances Stuvel analyzes would certainly lead to changes in the demand for money. The only course left to the interested reader is to go through Stuvel's analysis, special case by special case, testing alternative monetary assumptions and finding out under which sets of assumptions the model and the analysis of the particular case seem most reasonable. This is not only burdensome on the reader; it is also unsatisfying, for when he has worked through each case and found the plausible monetary assumptions underlying it, he will notice that a whole array of reasonable assumptions have been left out of account. To mention only the most glaring omission—nowhere in the book can we find what the conditions of stability in the foreign exchange market

[2] If the exchange rate is viewed as a free variable, an equation requiring balance in the foreign exchange market is necessary to complete the system. If the exchange rate is viewed as a parameter, the balance equation in the exchange market must be dropped.

would be if the government pursued the policy of stabilizing the general price level (either by a buffer-stock scheme or by the use of transfer payments and taxes to influence the level of home demand). These questions go unanswered, because to answer them one has to alter Stuvel's original "complete" model, just as we had to alter our original meat model to analyze the effects of price control.

Stuvel is not alone in his neglect of monetary factors. His errors of omission have been shared, to a greater or less extent, by most recent writers in the same general area (including myself)—a fact which makes it all the more necessary to point them out. But more important than the errors themselves is the pathology which underlies them. No one can read Stuvel's discussion of his individual equations without being impressed by the humility with which he faces a complex world, and by the sensitivity and toughness with which he attempts to capture what is relevant to his problem. These qualities do not disappear of themselves when the frame of reference expands from an equation to a model. Something must have intervened to block their working as well on the higher level as they did on the lower. The culprit, I am sure, was Stuvel's faith in his method—in the instance already discussed, a faith that plausible equations and mathematical completeness made further questions unnecessary—and in the instance about to be discussed, a faith that the conditions of stability in the foreign exchange market could be deduced from the sign of a derivative.

III. *The Problem of Translation*

To the frequent assertion that "mathematics is a language," I have often felt prone to retort that economics is a language too, and that not a few of our problems arise from our lack of a good dictionary to help us travel back and forth. Some of our concepts, like marginal utility, elasticity of demand, and the multiplier, have direct mathematical counterparts—the problem of translation is not serious here. But it becomes more serious when we reach a concept like market stability. A stable equilibrium, we agree, is one which, if disturbed by a random shock, tends to be restored; an equilibrium is unstable, on the other hand, if disturbances to it set in motion reaction chains that lead to movement ever farther from the initial position. Even in a simple supply-and-demand example, such as that assumed for the market for meat in the preceding section, it is hard to find an unambiguous translation of this notion of stability. For with the very same supply and demand curves, we may find the market stable if we assume one type of dynamic process, unstable, if we assume another. If the price is assumed always to be the same to both buyers and sellers, with disequilibrium re-

flected in changes in inventories, and if inventory decumulation is assumed to lead to price rises, and accumulation to price cuts, then the market will be unstable when, above the equilibrium price, demand exceeds supply. If, on the other hand, the quantity is assumed to be always the same to both buyers and sellers, and supplies are assumed to expand when demand price exceeds supply price, and to contract when the reverse is true, then the market will be unstable when, beyond the equilibrium quantity, demand price exceeds supply price. Cases can easily be found which are stable under the first process of adjustment and unstable under the second, and conversely. When reaction lags are introduced, as in cobweb models, even eminently "normal-looking" demand and supply curves can have unstable equilibria. Stuvel recognizes the necessity of choice, and ends up by assuming that the first process of adjustment mentioned above applies in the foreign exchange market.

Given this assumption about the dynamic process, Stuvel's procedure would be quite appropriate if he were concerned with a simple supply-and-demand model. If the derivative of excess-demand with respect to price were positive, the market would be unstable; if it were negative, the market would be stable. But applied to his own model, the same procedure backfires. To see why, let us analyze what happens when we take the derivative of the trade balance with respect to the exchange rate. It is precisely as if some governmental authority, having initially pegged the exchange rate at A, and observed that at that rate trade was balanced, subsequently devalued to B, with the intent to find out whether, at the lower rate, the trade balance would be positive or negative. The joker is that at both the initial rate A and the subsequent rate B, the rest of the system is assumed to be in equilibrium. The change in the exchange rate will shift the demand curve for exports (expressed as a function of the final-product price); the higher price of imports will shift the demand for labor (expressed as a function of output and the money wage). There will ensue a process of adjustment in which all the variables of the system—exports, imports, labor, final-product output, real income, the wage rate, and the final-product price —seek a new equilibrium. Such an equilibrium exists, by hypothesis, else the model would not be "complete." The crucial question, however, is whether the variables, freed from their old equilibrium levels, will find and maintain their new ones. In short, are *their* markets stable, or will the final-product price, under the stimulus of the newly created excess-demand, go skyrocketing to infinity, with wages chasing after, and imports, ever cheaper in relative price, constantly mounting in quantity, while exports, ever more expensive, constantly decline?

Stuvel's procedure, which assumes the variables to come to rest at their new equilibrium, regardless of whether it is stable or unstable,

obviously begs the question. This is nowhere more clearly shown than in his conclusions (1) and (6), which concern special cases in which only relative prices appear in the model (that is, in which money illusion and other non-homogeneities are absent). As is typical in such models, prices are determined only in terms of a *numeraire;* in particular, there is an equilibrium ratio of the final-product price and the exchange rate. If the exchange is devalued by 50 per cent, the new equilibrium price level will be twice the former one, and so on. With respect to such models, Stuvel comes to the astounding conclusion that there are no stability conditions at all! "The balance of payments equilibrium," he asserts in conclusion 6, "will in all circumstances be completely indifferent to changes in the exchange rate." The assumed existence of an equilibrium set of price ratios at which trade is balanced falsely leads him to the conclusion that these ratios will always prevail. He asks neither how prices would find their equilibrium level if the exchange were pegged at a lower rate, nor how the exchange rate, if left free, would find its equilibrium level if the final-product price were stabilized. In a world where only relative prices count, it is clearly the relative price which has to be disturbed before one can test whether an equilibrium will be restored—yet in Stuvel's translation of the concept of stability, the disturbance of the relative price is never allowed to occur.

I show in the mathematical appendix to this paper, how, in another case, Stuvel's procedure leads him to call stable situations of what I would call compound instability, in which both the market for goods (given the exchange rate) and the market for foreign exchange (given the price level) are unstable. But this curiosity may be left to the curious. The essential point of this section, that we may often be beguiled by easy and plausible analogies into false translations of our economic concepts, has already been made.

Mathematics is a powerful tool, and can, properly used by the economist to solve *his* problems, aid greatly in the advance of our science. But the very power of the tool is also its danger, for, as we have seen, it can subtly lead the unsuspecting economist to accept without a murmur answers which he does not fully understand. As Humpty Dumpty said in a quite different frame of reference, "The question is which is to be master—that's all."

Mathematical Appendix

In this appendix I shall deal with the special case in which Stuvel assumes labor to be continuously fully employed. I shall use my own notation, since Stuvel's is unnecessarily cumbersome, and shall make an assumption which Stuvel does not make explicitly—namely, that the

production of the final-product is competitive.[3] The "full-employment" model is set out below, with the equations written in generalized form on the left, and in differential form on the right.

The system may be viewed as consisting of the first 8 equations in the 8 unknowns: supply of output (y^s), demand for output (y^d), imports (m), exports (x), national income (z), home demand (c), marginal productivity of imports (ϕ_m) and the final-product price (p), with k, the exchange rate, treated as a parameter. Alternatively, k may be viewed as a variable of the system, and equation (9) altered to demand equilibrium in the trade balance ($b=db=0$).[4]

(1)	$y^s=\phi(m)$	Production Function[5]	$dy^s=\phi_m dm=dm$
(2)	$m=\Gamma(y^s, \phi_m)$	Demand for Imports	$dm=\beta d\phi_m+\gamma dy^s$
(3)	$\phi_m=k/p$	"Competition" Equation[5]	$d\phi_m=dk-dp$
(4)	$y^d=c+x$	Demand for Output	$dy^d=dc+dx$
(5)	$x=\psi(p/k)$	Demand for Exports[5]	$dx=\mu d(p/k)=-\mu d\phi_m$
(6)	$z=y^s-m\phi_m$	Definition of National Income[6]	$dz=-md\phi_m$
(7)	$c=\Lambda(z, p)$	Home Demand	$dc=\sigma dz+\tau dp$
(8)	$y^d=y^s$	Equilibrium Condition	$dy^d=dy^s$
(9)	$b=x-m\phi_m$	Definition of Trade Balance	$db=dx-md\phi_m-\phi_m dm$

[3] I defend this assumption by elimination of the only other possibilities, given a single final product—namely, monopoly and oligopoly. The first I eliminate on the grounds that it is implausible to treat countries like Holland, whose economies the model is supposed to represent, as having only a single monopolistic firm. The second I eliminate because, except for very special cases, indeterminate solutions are likely to result. Price leadership may be regarded as a special case of monopoly, and is eliminated on analogous grounds. The assumption of competition, though it simplifies the analysis somewhat, is not critical to the general argument either of the text or of this appendix.

[4] To get the "general" model, substitute (1′) $y^s=\phi(m, n)$, for (1), where n is labor, and add a demand equation for labor analogous to that for imports, (10) $n^d=N(y^s, \phi_n)$, and a supply equation for labor, (11) $n^s=\Pi(\phi_n, p)$. Here ϕ_n is the marginal productivity of labor, and, under the assumption of competition, is also the real wage. These, with the condition of equilibrium in the labor market, (12) $n^d=n^s$, complete the system.

[5] Explanation of these differentials is necessary. Stuvel assumes that the foreign-currency price of the imported factor is fixed. Hence its local-currency price will be the exchange rate (k) times its foreign currency price. I define my unit of foreign currency as the amount which initially sold for a unit of domestic currency (hence the exchange rate is initially unity), and my unit of imports as the amount which sells (both initially and subsequently) for a unit of foreign currency. Hence the exchange rate k (which is the price of foreign currency) and the price of imports are always identical, and they are initially equal to unity. The assumption of competition assures us that the price of imports (k) will equal the marginal product of imports (ϕ_m) times the price of the product (p). I define my unit of the final product as the amount which initially sold for a unit of domestic currency. Thus the initial values of p, ϕ_m, and k are all unity, which makes it permissible to write $\phi_m dm=dm$ in equation (1), $d\phi m=dk-dp$ in equation (3), and $\mu d(p/k)=-\mu d\phi_m$ in equation (5). These definitions of initial units clearly have no analytical significance.

[6] To obtain this differential, take the differential of (6) $dz=dy^s-\phi_m dm-md\phi_m$, and substitute, from (1), $\phi_m dm$ for dy^s.

I have made it a point in this model, both to maintain the production function as an explicit equation of the system, and to distinguish explicitly between the supply and the demand for the final product. Stuvel's failure to do the same may partially account for his errors.

The major coefficients of the system, with their assumed signs, are β (the price slope of the import function, assumed to be negative), γ (the marginal propensity to import, assumed to be positive), μ (the price slope of the demand function for exports, assumed to be negative), σ (the marginal propensity of home purchasers to spend, assumed to be positive and less than unity), and τ (the coefficient of money illusion on the part of home spenders, which will be negative if proportionate increases in incomes and prices would curtail real spending, and positive if the converse is true).

Let us now explore the system in search of potential instabilities. None will arise directly out of the market for imports, where a downward sloping demand curve meets a horizontal supply curve. Nor will any arise directly out of the market for labor, where a vertical supply curve is met by a downward sloping demand curve (not explicit in this full-employment model, but given in footnote 4). We may therefore concentrate our attention on the market for the final-product and the trade balance (the foreign exchange market).

Let us first note that equations (1) and (2) may be solved to give imports as a function of their relative price alone, with $dm=\beta d\phi_m/1-\gamma$. Since exports are already a function of ϕ_m alone, the trade balance must be so also (ϕ_m here takes on an added alias—the terms of trade), with $db=-(\mu+(\beta/1-\gamma)+m)d\phi_m$. Since in this market it is only the relative price, ϕ_m, which counts, we may express its condition of stability as $db/d\phi_m>0$. If the exchange rate were stabilized, and the attempt made to equilibrate an initial disequilibrium in the trade balance by deflation, or if with stabilized or sticky prices the exchange rate were left free to bring about balanced trade, this would be a necessary condition of stability.

It need not be a sufficient condition, however, for we have yet to look at the market for y. From equations (1) and (2) we see that the supply of y depends only on ϕ_m, and that $dy^s=\beta d\phi_m/1-\gamma$. From equations (4)–(7), we learn that the demand for y depends not only on ϕ_m, but also (because of the money illusion factor) on the absolute price level, p, with $dy^d=(-\mu-\sigma m)d\phi_m+\tau dp$. Recalling that $\phi_m=k/p$, we see that the conditions of stability in the market for y will differ depending on whether adjustment is sought through changes in the exchange rate (with prices constant, so that the money illusion does not operate) or through changes in the price level (with the exchange rate constant and the money illusion operative). With the former mechanism of adjustment, stability requires that $(\mu+(\beta/1-\gamma)+\sigma m)$ be negative, while with the

latter, stability requires that $(\mu+(\beta/1-\gamma)+\sigma m+\tau)$ be negative. Although with the former mechanism, the necessary condition of stability in the foreign exchange market $[(\mu+(\beta/1-\gamma)+m)<0]$ implies stability in the market for y, the same is not true under the latter mechanism, where τ, if positive, can be sufficiently large to prevent $(\mu+(\beta/1-\gamma)+\sigma m+\tau)$ from being negative even though $(\mu+(\beta/1-\gamma)+m)$ is less than zero. Clearly, if this is the case, the trade balance will be unstable in spite of the fact that our earlier necessary condition of stability is fulfilled, because the instability in the price level will constantly unsettle the terms of trade, on which, in turn, the trade balance depends.[7]

We thus have two sets of necessary conditions for stability, one arising out of the requirement that the trade balance be stable with respect to the terms of trade, and the other rooted in the need for stability in the final-product market. But even if these two conditions are met, devaluation may fail to improve the trade balance if the devaluation causes the equilibrium price level to rise so far that the relative price of imports, which devaluation was intended to raise, actually falls. This anomaly, mathematically designated by $(d\phi_m/dk)<0$, will be present if the money illusion is positive—and only then—so long as our other necessary conditions of stability are met.[8] We may therefore add to our conditions of stability the requirement that the money illusion be zero or negative.

Stuvel's derivation of the stability conditions in this model is quite different from that given above. His criterion, it will be recalled, is that db/dk be positive. Hence he observes

$$\begin{aligned}\frac{db}{dk} &= \left(\frac{db}{d\phi_m}\right)\left(\frac{d\phi_m}{dk}\right)\\ &= \left(-\mu-\frac{\beta}{1-\gamma}-m\right)\left(\frac{\tau}{\mu+\dfrac{\beta}{1-\gamma}+\sigma m+\tau}\right),\end{aligned}$$

and concluded that stability will prevail whenever the two bracketed expressions are of the same sign. Yet consider the following example: assume a negative money illusion $(\tau<0)$, an unstable market for y $[(\mu+(\beta/1-\gamma)+\sigma m+\tau)>0]$, and a trade balance unstable with respect to the terms of trade $[(db/d\phi_m)<0]$. Here, by Stuvel's implicit logic, the one instability must cancel the other—for this is included among his cases of stability in conclusion 13! One may also see, by reference to the

[7] The exception to this statement arises when $(\mu+(\beta/1-\gamma)+m)=0$, for then, even though the terms of trade explode because of instability in the final-product market, the balance of trade will not respond.

[8] Readers may verify that $(d\phi_m/dk)=\tau/(\mu+(\beta/1-\gamma)+\sigma m+\tau)$. Our earlier conditions require that $(\mu+(\beta/1-\gamma)+\sigma m+\tau)$ be negative; hence $d\phi_m/dk$ will be negative when τ is positive. The statement is also amenable to a simple graphical proof.

above expression for *db/dk*, why Stuvel denies that stability conditions exist for models in which only relative prices count. The system under review can be transformed into such a model simply by making $\tau=0$, but when that happens, the numerator in the second bracket erases the entire expression for *db/dk*, and Stuvel is left to conclude that regardless of whatever queer shapes the demand and supply curves may have, the trade balance will never change, let alone be unstable. True though this is, so long as the terms of trade never deviate from their equilibrium value, it is a poor approach to the problem of stability to assume that the relevant price is always in equilibrium. It is irrelevant not only analytically, but also practically; for the equilibrium terms of trade which Stuvel assumes in his relative-price models give his country full employment, equilibrated markets, and balanced trade. What country, with such a setup, would ever want to devalue?

MONETARY POLICY AND THE MANAGEMENT OF THE PUBLIC DEBT[1]

By HERBERT STEIN*

On March 4, 1951, after ten years of fairly rigid suport of the government securities market by the Federal Reserve and five years of active controversy over that support, the Treasury and the Federal Reserve announced that they had reached an accord on a new money-debt policy. The main feature of the accord, as soon became apparent, was that the Federal Reserve would permit some rise in the yield of government securities, short-term and long-term, if necessary, as part of a restrictive monetary policy to help prevent inflation. On April 9, 1951 a Subcommittee of the Congressional Joint Committee on the Economic Report was established, under the chairmanship of Congressman Wright Patman, to investigate the government's monetary and debt-management policy. A similar subcommittee, with Senator Douglas as chairman, had covered much of the same ground under different circumstances in 1949.[2]

The volumes under review constitute the materials prepared for and by the Patman Subcommittee and consist of three parts:

1. Replies to questionnaires addressed by the Subcommittee to the Secretary of the Treasury, the chairman of the Board of Governors of the Federal Reserve System, the Council of Economic Advisers, the presidents of the Federal Reserve Banks, State bank supervisors, a number of other government agencies and selected economists, bankers, life insurance executives and government securities dealers (1900 pages, of which about one-third is from the Treasury and the Board of Governors).

2. The record of the oral hearings before the Subcommittee, at which Secretary Snyder, chairman Martin of the Board of Governors, chairman Keyserling of the Council of Economic Advisers and forty-two other witnesses testified (1000 pages, of which about one-fourth is from the first three witnesses named).

3. The report of the majority of the Subcommittee, Congressmen Patman and Bolling and Senator Flanders (with some reservations) and a minority report of Senator Douglas, with Congressman Wolcott concurring (80 pages).

A study of this kind can be appraised at two levels—first, its contribution to policy and action and second, its contribution to thought and knowledge.

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[1] Report, Hearings and Materials of the Subcommittee on General Credit Control of the Joint Committee on the Economic Report, Congress of the United States, 82nd Congress, 2nd Session, 1951-52.

[2] See Goldenweiser, "Douglas Committee Report," *Am. Econ. Rev.*, June 1950, XL, 389-96.

When the Patman investigation was first announced many people thought that they knew what it would do, or try to do. It was feared by many, and possibly hoped by some, that the study would tend to inhibit an active anti-inflationary monetary policy and to reduce the independence of the Federal Reserve System. There were several reasons for this expectation. Coming so soon after the accord between the Treasury and the Federal Reserve, the investigation naturally seemed to be aimed at the accord. And why should the Subcommittee investigate the accord unless it thought there was something wrong with it? Moreover, Congressman Patman had something of a reputation as an inflationist and as an easy-money man. And the Subcommittee's economist, Henry Murphy, was believed on the basis of his wartime connection with the Treasury and his postwar writing to be a champion of a pegged bond market.

The anticipated result did not follow. Although much of the evidence presented to the Subcommittee, and the Subcommittee's own report, was lukewarm about how much good the accord would do, the investigation did not tend to stimulate sentiment for a return to a pegged bond market. While the independence of the Federal Reserve came in for much critical discussion at the hearings, the Subcommittee made only one rather tentative suggestion in the direction of tying the Federal Reserve more closely into the Administration. This suggestion, involving creation of a monetary-fiscal advisory council, seems no closer to adoption now than before the investigation started. And monetary restriction has proceeded farther, at least as measured by the rise of interest rates, than might have been foreseen when the accord was announced.

There are a number of reasons, in addition to the merits of the case, for the failure of the investigation to live up to the advance suspicions of it. First of all, credit must go to Congressman Patman, the other members of the Subcommittee, and Mr. Murphy for the entirely impartial way in which the investigation was conducted. Moreover, the situation was not favorable for an attack upon the new, more active, anti-inflationary monetary policy. If there was to be an attack on tighter money it would have to be led, or at least supported, by the largest debtor in the land—the Treasury. But whatever may have been its attitude previously, the Treasury was now a party to the accord, and neither led nor supported such an attack. Finally, if monetary policy was on trial, where was the corpus delicti? There had been no panic or disruption in the capital markets, no sharp rise in the interest burden on the debt, no depression, no interference with defense production even vaguely traceable to monetary causes. The accord came almost simultaneously with the beginning of a period of price stability that lasted throughout the Patman investigation. Many of the witnesses called this a coincidence. But if the coincidence had been the other way—either a marked recession or continued inflation—the ordeal of monetary policy would have been more difficult. The most serious disadvantage Mr. Keyserling saw in the accord was that the coincidence of the beginning of flexible monetary policy and the beginning of price stability might delude people into thinking that monetary policy is more effective than he believes it to be.

The contribution of the investigation to action and policy was negative, but nonetheless important. Its significance lay in the fact that monetary restriction, and the independence that led to it, had been examined and not seriously rebuffed. This gave them more power to survive than if there had been no investigation at all.

What about the contribution of the study to knowledge? From this standpoint the greatest value of the investigation for economists probably lies in the material provided for studying the thinking of persons in important policy positions. There is relatively little said in these volumes that has not been read or heard somewhere by the subscribers to this journal. But the significance, if not the truth of a statement, is quite different when the statement is made by the Secretary of the Treasury than when it is made in a journal article.

To narrow the area of greatest interest down farther, I would point to the oral testimony of Secretary Snyder and Mr. Keyserling as the 200 pages of this study most deserving of attention by economists. Perhaps it is a sign of lack of "neutrality" on the part of this reviewer to think that it is the position of those who resisted more vigorous anti-inflationary monetary policy that has been most in need of further explanation. But the pro-money view has developed into fairly systematic form over many years. We know pretty much what will be said by people on that side of the argument. The listing of reasons why use of monetary policy to curb inflation would be ineffective, or if effective undesirable, is much newer. We have not previously had so good an opportunity to see which of these reasons carry weight with the persons who had to make the decisions.

It is not easy to be sure of what the witnesses really think. Secretary Snyder is particularly uncommunicative. We have, for example, such exchanges as the following:

> Senator Douglas: "Suppose the Federal Reserve had not bought the securities; what would have happened?"
> Secretary Snyder: "That is what I brought up."
> Senator Douglas: "What would have happened?"
> Secretary Snyder: "I don't know."

Or this:

> Representative Bolling: "What, in your judgment, would be the effect on the economy if there should be a substantial falling off of Government bonds?"
> Secretary Snyder: "That is a question I would like to answer in executive session, because I am the one and only person that is responsible for the final decisions on debt management, except that the President must approve all offerings of issues having maturities over 1 year. To discuss things of that sort in an open session—I cannot measure what the effect might be."

Mr. Keyserling is quite a different kind of witness. Mr. Keyserling says so much that it is often difficult to tell what is important in his reasoning and what is not. Certainly the reader will sympathize with Senator Douglas' complaint, after following Mr. Keyserling down many byways, that we seem to be lost in a "semantic wilderness."

Despite these difficulties, certain notable impressions do emerge about the philosophy that inhibited use of a restrictive monetary policy in the postwar and post-Korean inflations. One of these questions relates to the importance of preventing inflation. On the assumption that monetary restriction could prevent inflation, an assumption to which we shall return later, the policy issue involved a balancing of the costs of inflation against the costs of preventing it in this particular way. Many of the postwar differences of opinion, of course, resulted from different appraisals of the costs of monetary restriction. But the hearings suggest that differences of opinion about "how bad is inflation" were, and still are, also important.

The best evidence on this point appears in Mr. Keyserling's testimony. For example, when Senator Douglas asks him whether an over-all increase in prices is a burden on the economy Mr. Keyserling says:

> "Sometimes it is and sometimes it is not, but I want to discuss that in some detail, Senator. I think sometimes it is and sometimes it is not. That is just the point I want to make."

In answer to a question from Senator Douglas about whether the bond support program did any real damage, Mr. Keyserling says:

> "Before I reach a final conclusion as to whether an economic policy has done damage, I want to look at what I call the end results in the economy. In my judgment, the end results in the economy are the level and distribution of the production of its resources."

Mr. Keyserling's testimony contains many other references in similar terms to the "end results" in the economy. These end results do not include effects on the price level.

This preoccupation with the "real" behavior of the economy would be unexceptionable, if it were not also preoccupation with short-run results. There is no evidence of any concern with the consequences of a generation of continued inflation at the rate of the past two or five or ten years.

This is not very explicit evidence on a very important point. But I do not think that anyone can read the Douglas questioning of Keyserling without feeling that the difference of attitude toward inflation is a major cause of their difficulty in coming to grips with each other. For Douglas, "Thou shalt not inflate" is a moral precept. For Keyserling, inflation is a bad thing, like high taxes, which however, also like high taxes, it may be desirable to choose in certain circumstances.

Of course, Mr. Keyserling and Secretary Snyder want to stop inflation. But they do not want to stop it so badly that they are willing to stop it by what they regard as an inferior method, monetary restriction. There is much discussion of better ways, which come down mainly to higher taxes, selective credit controls and, in special circumstances, direct price and wage controls. The relative advantages of these methods as compared with monetary restriction for preventing inflation is an arguable question. But during most of the postwar period these "better methods" were being used to the full extent of the existing legislative authority, and additional authority could have been obtained only after many months, if it could have been obtained at all. The

typical situation was that there was only one strong instrument available for immediate use—monetary restriction. In "practical" terms—so often contrasted in these hearings with "theoretical" terms—the choice was between inflation and monetary restriction, not between monetary restriction and other instruments that might have been used.

To say that there was a choice between monetary restriction and inflation implies that monetary restriction could have stopped the inflation. There is surprisingly little argument on this point in the hearings. Nobody tries to develop a theory of a limit to the effectiveness of tight money analogous to the theory of the limit to the effectiveness of easy money that is supposed to result from the existence of a floor below which interest rates cannot fall. Instead the argument is that while tight money pushed far enough could have stopped inflation, the costs of pushing it that far would have been extremely great.

It is worth noting that in the discussion before the Patman Subcommittee increasing the interest burden on the federal debt is not emphasized as an important cost of tight money policy. Secretary Snyder, Mr. Keyserling and others refer to the interest burden, but it does not seem to be a major concern.

Secretary Snyder's major concern is with "confidence." "Confidence" and "caution" are key words in his testimony, recurring over and over. In some of the Treasury answers to the questionnaire of the Patman Subcommittee, "confidence" is defined so broadly as to be synonymous with everything good. But when the Secretary uses the term to explain particular actions, "confidence" seems to have a more definite and limited meaning. It means the expectation of stability in the government bond market. And caution means not rocking the boat.

A few quotations from Treasury answers will illustrate the mood in which the Treasury approached its problems:

> "The Treasury was cautious throughout the postwar period. In the early part of that period, the situation was one which required extreme caution since at any time the dislocations accompanying the decline in military output might have proved serious.
>
> "It was not only in the early postwar period, however, that caution was required. There were many occasions when the country felt uncertain about the economic future. There were recurring waves of pessimism throughout the entire postwar period—particularly among businessmen. Year after year, there were forecasts that the postwar prosperity was at an end and that recession was about to set in. This pessimism occurred in 1946; it occurred in 1947; in 1948; and again—most seriously—in 1949.
>
> "In early January of 1950 it [the Federal Reserve] recommended that short-term rates be moved up once again—from the 1⅛ per cent 1-year rate to 1¼ per cent on a 14-month note. The Treasury was not sure that this was desirable so soon and felt that caution was called for."

A letter from Secretary Snyder to the Chairman of the Federal Reserve on July 17, 1950 contains the following passages:

> "I feel that everything possible should be done to maintain a basically strong position in the Government bond market during the present period

of international disturbance. The firmness with which the market has withstood the impact of the events of the past three weeks is certainly a testimonial to good management. It is also the best possible evidence of the confidence which has been built up in our ability and determination to maintain a stable market for Federal securities.

"I know you will agree with me that it is of the utmost importance at the present time to maintain that confidence and, in addition, to do everything possible to strengthen it. This involves, first of all, avoiding any course which would give rise to a belief that significant changes in the pattern of rates were under consideration.

"There are, of course, occasions which call for quick and bold action. These occasions have occurred with respect to the Federal security market and they may occur again. But every appraisal of the present situation indicates that the maintenance of stability should take priority over all other market considerations. A stable and confident situation in the market for Federal securities is our first line of defense on the financial front, no matter what may be ahead of us.

"During the present stage of the emergency, it is vital to make use of every opportunity for assuring our citizens that those at the head of their Government have a strong and steady hand at the helm."

It is difficult to be sure of reading anyone's mind correctly on the basis of the kind of material available from a Congressional investigation. Yet the evidence suggests that the way to understand the Treasury's position is to appreciate the important part played by an attitude of mind in which "confidence" and "caution" are the highest values and are directly translated, without the intervention of any elaborate economic argument, into confidence in stability of government bonds and caution about doing anything that might upset that stability. Such an attitude requires explanation, but I doubt that the Treasury's position can be best explained by converting it into economists' language.

In explaining post-Korean monetary policy, both the Treasury and the majority of the Subcommittee lay great stress on the deterioration of international relations and the possibility of war. As the Subcommittee report says:

"At the time of the outbreak in Korea the interest rate for long-term Government borrowing was 2½ per cent, and had remained at that level for nearly ten years. Investor confidence in the rate was high and it might have taken a long period to establish an equal degree of investor confidence in any other rate, either higher or lower. This period could have been ill afforded in the event of the immediate outbreak of war, and under the circumstances it is not surprising that the Treasury placed great emphasis on the maintenance of stability in the Government bond market. The fact that war did not break out should not make this concern seem puerile in retrospect. Fiscal preparedness, like military preparedness, serves the national interest best when it does not need to be called into action."

The analogy with military preparedness is interesting. Our military preparedness program was not based on the assumption that the immediate outbreak of war was at all likely. The official view was that we would have about two years of military build-up followed by a long period of high defense

expenditures. Why should the Treasury have been the first to batten down the hatches and prepare for immediate war?

In fact, the defense program, not only as seen in retrospect but also as seen in July 1950, made getting off the peg more urgent than it had been previously. Before Korea one could at least think that we might soon enter a period in which private investment demand would abate and the pegged interest rates would no longer be inconsistent with price stability. But the post-Korean defense program obviously presaged a resumption of inflationary pressure that we were not well prepared to counter. And suppose we were going to have a war. Was it wise fiscal preparedness to commit ourselves in advance—possibly years in advance—to going through the next war and the next postwar years (if any) with the same interest rates we had carried over from the 1930's?

Whereas Secretary Snyder's key word is "confidence," Mr. Keyserling's key word is "production." His main argument is that monetary restriction carried far enough to stop inflation (or retard it substantially) will seriously reduce production, especially production essential to national security. Although this proposition is restated dozens of times, it never becomes clear why it is true. No distinction is made between the money value of output and the real value of output. The analysis seems to be that monetary restriction can reduce inflation only by reducing total expenditures for product, total expenditures for product are by definition equal to total output, and therefore monetary restriction can reduce inflation only by reducing total output. But the change in the money value of expenditures, brought about by monetary restriction, is not by definition equal to the change in the real value of output, with which Mr. Keyserling is concerned. Undoubtedly there are connections, and probably Mr. Keyserling has opinions about what they are. But failure to explain these connections leaves this important part of the whole argument up in the air.

This may seem to be an incredible interpretation of so sophisticated a person; therefore, I should like to quote what is, in my opinion, the heart of Mr. Keyserling's argument:

> Senator Douglas: "Where did this capital formation come from, Mr. Keyserling?"
>
> Mr. Keyserling: "It came from the effort of labor, from the directing skill of business, and from the availability of financial and physical resources to do jobs which, in terms of the mobilization program, businessmen thought it would be profitable or patriotic or both to do.
>
> Senator Douglas: "May I ask you this: How did the increase in bank loans make possible all these desirable results?"
>
> Mr. Keyserling: "It does not alone make them possible."
>
> Senator Douglas: "Well, that is the issue, whether it was necessary to increase bank loans as much as they did expand in order to put more labor to use, to get greater skill for management, and so forth. How did this increase in loans do that when there was virtually full employment at the time?"
>
> Mr. Keyserling: "Senator, the question I have raised is different and, I think, very important. The point I have made is that—may I resort for just a second to this tool of logic?"

Senator Douglas: "Surely."

Mr. Keyserling: "Proposition A: It must be assumed from the point of view of your line of discourse that if the expansion of the kind of credit that you are talking about had been less, not by a restrictive policy but by not letting it expand, it must be assumed that there would have been a lower level of the end result which commands our resources, namely, construction, building, employment, and so forth and so on."

Senator Douglas: "These things do not come out of the air, Mr. Keyserling. How was it that this increase in loans made possible the increase in production, the increase in savings, the increase in investment, and so on?"

Mr. Keyserling: "I am not, through my own fault—I have not made myself clear, Senator. I am saying that if the varying policy which you suggest, if the varying policy which you suggest had not appreciably changed the level of capital formation, of investment and of employment in specific lines of economic activity, if it had not substantially changed those levels, its ultimate effect upon the economy and upon the price level would have been nugatory because it is the spending of funds for business activities, whether by business or consumers, that puts the pressure on prices.

"To state it another way, if there had been other factors at play in the economy which would have resulted in an equal level of capital formation, of investment and in business activity, with or without this variant you suggest, then I cannot ascribe much importance to the variant. Now, that happens to be what I think. It may be wrong, but I do not think that the variant that you suggest would have much changed the level at the end of what would have happened in the economy during that period to employment, to investment, to capital formation.

"Then I raise a second question which seems to be—"

Senator Douglas: "Let us take this first one, and I want to make it clear. Is it your contention that it was necessary in order to get this expansion in production that bank loans should be increased by $10 billion?"

Mr. Keyserling: "No; my contention is that if the expansion of bank loans was not necessary to that purpose, and if that expansion in production would have taken place anyway, it is that expansion which exerts the impact upon the economy; that is the point I am making."

As I understand it, what Senator Douglas is saying is that we could have had the same real amount of investment with a smaller money amount of investment. That is, the same amount of real investment could have been carried out at a lower (less rapidly rising) price level. It would have been possible for Mr. Keyserling, while accepting the distinction between the real values and the money values, to maintain that restraining the money values would have seriously reduced the real value of output. But he doesn't do this. He simply ignores the distinction.

Much attention was given in the Patman investigation to the "independence" of the Federal Reserve. In terms of possible action, this discussion

focused mainly on a suggestion by the Secretary of the Treasury for the establishment of an advisory council on monetary and fiscal matters. This group, as proposed by the Treasury, would include the Secretary of the Treasury, the chairman of the Board of Governors of the Federal Reserve System, the Director of the Budget, the chairman of the Council of Economic Advisers and the chairman of the Securities and Exchange Commission.

The most helpful analysis of this proposal, and of other proposals to tie the Federal Reserve more closely in to the Administration, is provided by Senator Douglas in his comments dissenting from the majority report of the Subcommittee. Senator Douglas' contribution is to point out that the proper organization of the Federal Reserve depends upon the kinds of decisions the Federal Reserve has to make. The problem arises most pointedly in connection with inflation. If by a legislative mandate the Federal Reserve can be effectively prevented from ever deciding to have an inflationary monetary policy, close relations with the Administration can do no harm and may be helpful. On the other hand, if the Federal Reserve is to be free to choose an inflationary policy, and if it is public policy not to have inflation, then the Federal Reserve should be insulated as far as possible from the inflationary bias of the Treasury and the rest of the Administration. This leaves a third possibility, not discussed by Senator Douglas. If inflation is an eligible goal or, more likely, instrument of public policy, the Federal Reserve should be closely tied in to the Administration. If a decision must be made whether to have inflation or not, this decision should be made by officials directly responsible to the electorate.

"Finally, we come to debt management." This seems to be the standard way in which we do come to debt management—that is, "finally." We write long essays on financial policy, and in the last paragraph we say, "There is also the very important matter of debt management, which space prevents us from treating here." This is the way the subject is handled in the *Survey of Contemporary Economics.*[8]

The Patman investigation is a study of "Monetary Policy and the Management of the Public Debt." If debt management means something different from monetary policy it means the decisions about the composition of the debt held outside the Federal Reserve Banks—the maturities, marketability, convertibility, eligibility, selling methods and other terms of the securities that are issued, retired, and outstanding. There are two questions about the composition of the debt: (a) What difference do possible differences in the composition of the debt make for stabilization, productivity or any other important objective? (b) How can the differential effects of different kinds of securities be used as an instrument of national policy?

The Patman material does contain some discussion of savings bonds and of purchasing power bonds. But for the kinds of securities that make up the great bulk of the debt, and the kinds of decisions the Treasury is constantly making about types of securities to issue, there is no explanation, nor even

[8] Published for the American Economic Association, Vol. I (Philadelphia: Blakeston, 1948), Ch. 5 and Vol. II (Homewood, Ill.: Richard Irwin, 1952), Ch. 7.

any interesting hypotheses, as to what difference it makes. The Treasury points to several examples of what it regards as constructive debt management, such as the issuance of bills to tap corporate tax reserves. But the analysis is not carried far enough to indicate the actual or expected effect of this particular security, as compared with some other. What would corporations have done with their tax reserves if these bills had not been offered? Where would the Treasury have raised the money it needed if it had not issued these bills? What would have been the consequences of these differences, in terms of the level and structure of interest rates, or investment or any other significant variable in the economy? One witness who got away from clichés in this field was Aubrey Lanston. His testimony is worth reading for this and other reasons.

It is no criticism of the Patman investigation that it was not more productive on the subject of debt management, as here defined. This subject was overshadowed by questions of monetary policy. Moreover, the problems are too difficult to be attacked by the technique available to a Congressional Committee. However, now that the question of to peg or not to peg has been settled for the time being, it would be desirable for economists to turn their attention to trying to find out what difference debt management makes. And if it makes no difference, which is possible, that would also be worth knowing.

COMMUNICATIONS

American Reprints of Economic Writings 1776-1848

A Discursive Bibliographical Note

It is so easy to assume that similarity of ideas is based on the direct derivation of one system from another that cautious historians of thought must demand additional evidence. This is particularly true of the influence of the English classical economists in English-reading United States. Such evidence Seligman[1] and Dorfman[2] have in some measure supplied. Further data may not be superfluous. The appended list, chronologically arranged, of the first publication and the reprinting in the United States of English economic writings 1776-1848, with a few French items, may serve as a kind of footnote of substantiation. For if the works of English economists were published and sold in the United States for three quarters of a century, it seems safe to assume that they were read.

The list, brief as it is, seems to be a compilation not elsewhere to be found. Until one develops a special interest, the character of bibliographies, both as to coverage and classification, may escape one's attention. It wasn't until I began to see significance in the reprints that I noticed a gap in the record of American publications. Evan's *American Bibliography* which attempts complete coverage runs from 1639 to 1799; Rohrbach's *Bibliothetica Americana* covers 1820-1861. International copyright was not granted until 1891; therefore until that date there was no official list of American reissues of foreign books. For the important years 1800-20, important for the development of classical theory, there is no general bibliography of American publications. Economic bibliographies do not help. McCulloch's *Literature of Political Economy* (1845) is useless in this connection. *The Economic Library of Jacob H. Hollander* (1937) lists an American edition if Professor Hollander possessed one; but he had few. The catalogue of the *Kress Library of Business and Economics* covers material through 1776; Higgs, *Bibliography of Economics,* through 1775; Batson, *Bibliography of Economic Theory* begins at 1870. Sabin's *Dictionary* includes only books which relate to America.

The list has been a byproduct of the perusal of booksellers' catalogues of which, unfortunately, I have not saved the complete file. Only the reprinting of the *Wealth of Nations* for which there is full information in the catalogue of the Vanderblue collection, and of Dugald Stewart's *Works* came from Evan's *American Bibliography*. The dates explain why. The list stops in

[1] Seligman, E. R. A., "The Early Teaching of Economics in the United States" in *Economic Essays in Honor of John Bates Clark,* 1927.

[2] Dorfman, J. *The Economic Mind in American Civilization, 1606-1865* (New York, 1946), Vol. I.

1848, a year signalized by the simultaneous appearance in both countries of Mill's *Principles*. The American dates are of course no more authoritative than the booksellers who made the catalogues and are based on the chance survival and discovery of the books.

The list reveals the close intellectual link the new nation maintained with England and, to a lesser extent, with France. I wish it were possible to supplement it with a list of books imported, though these may be sufficiently indicated by the catalogue of Jefferson's library. The titles show a liking for the theoretical and abstract side of economics, perhaps prepared for by the interest in theology so long dominant in the colonies (see Evans). One might have expected practical treatises and current controversy; of the former I have noted the *Planters' Guide* and I ought to add various works of reference such as McCulloch's *Gazeteer*, reprinted many times. Does this show merely that the practical is soon out of date and promptly discarded? It is surprising that in spite of the great interest in problems of currency and banking and in the tariff, only Thornton's *Inquiry* appears from the bullion controversy and nothing from the prolonged discussion of the Corn Laws. I hope that other readers of this *Review* may be able to supply titles to fill the gap and thus show it to have been a chance result of my reading.

At least one of the books printed, Destutt de Tracy's *Treatise on Political Economy*,[3] was the choice of Jefferson. His letter to Joseph Milligan of Georgetown, D.C., its publisher, though dated October 25, 1818, appears as a kind of preface in some of the volumes bearing the date 1817; perhaps a later binding of the printing of the earlier year? This work appeared in translation in America before it was printed in French. Jefferson's responsibility for the translation, entrusted by him to General Duane, he refers to as "a most laborious business." As the volume is somewhat rare it may be useful to quote part of Jefferson's letter:

> I now return . . . the translation of M. Destutt de Tracy's *Treatise on Political Economy*, which I have carefully revised and corrected. . . . It would be difficult to do justice in any translation, to the style of the original in which no word is unnecessary, no word can be changed for the better, and severity of logic results in that brevity, to which we wish all science reduced. The merit of this work will, I hope, place it in the hands of every reader in our country. . . . By diffusing sound principles of Political Economy, it will protect the public industry from the parasite institutions [banks] now consuming it, and lead us to that just and regular distribution of the public burdens from which we have sometimes strayed. It goes forth therefore with my hearty prayers, that while the *Review of Montesquieu*, by the same author, is made with us the elementary book of instruction in the principles of civil government, so the present work may be in the particular branch of Political Economy.

I challenge any modern reader to share this opinion.

In 1819 Joseph Milligan, who acted for Jefferson as bookbinder and book

[3] Georgetown, D.C., 1817.

agent as well as publisher, brought out Ricardo's *Principles.*[4] I was about to assume that Jefferson had sponsored this venture also when I came upon the following passage in Chinard's study of the influence of the Idealogues.[5] Jefferson to Milligan:

> On receipt of your letter proposing to republish Ricardo, I turned to the Edinburgh review and read that article. . . . If you do republish it I wish but doubt your seeing your own by it. It is a work in my opinion which will not stand the test of time and trial. If such men as Adam Smith, Malthus, Say and Tracy knew nothing of the nature of rent or of the effect of Capital in prices, it is not to be proved by such muddy reasoning as that of Richardo, or his Edinburgh [*Review*] critic. . . . The reputation of the work will, I think, fall as soon as it comes to be read.

Thus Jefferson, and to judge from the nature of their comments, many subsequent critics have been content to appraise Ricardo without reading his works. In the same month Milligan wrote Jefferson that he was going forward with an edition of 500 to 600 copies of the *Principles* since he is assured of some 250 subscriptions from members of the government and the Congress (Chinard, *op. cit.*, p. 187); admirable testimony to the seriousness of the legislators and administrators of that day. Ricardo by the way quotes Tracy on the measure of value (*Principles,* McCulloch edition, pp. 171-72). I have not found that Tracy reciprocates though he wrote that Malthus treated the subject [population] "most profoundly" (Chinard, *op. cit.*, p. 128).

Since there was no international copyright, one must assume that few if any of the authors benefited greatly from their American sales. The *Cambridge History of American Literature* (Vol. IV, p. 547) states that the better class of publishers on both sides of the Atlantic tried to do at least nominal justice to the author they republished, and instituted a system of payment for advance sheets or copies. But, alas, "as soon as a reputable American publisher had issued a book that held the promise of a sale, the pirates rushed out an edition." Testimony to the more honorable practice of Ticknor and Fields is to be found in the American edition of *The Logic of Political Economy,* published in Boston as the *Logic of Political Economy and Other Papers.* De Quincey (whose name it is always pleasant to associate with economics) writes that he wishes to put his papers into the hands of this house which "made me a participator in the pecuniary profits of the American edition, without solicitation . . . without any legal claim. . . ."

In this short list six cities are represented: Philadelphia has twelve titles of which Mathew Carey printed three: Boston eight, and New York eight. The history of the shift in the centers of publication might make a pleasant hobby for an economic historian.

ESTHER LOWENTHAL*

[4] Ricardo, David, *On the Principles of Political Economy and Taxation* (Georgetown, D.C., 1819).

[5] Chinard, G., *Jefferson et les Idealogues* (The Johns Hopkins Press, 1925), p. 186.

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	Original Publication	*American Printing*
SMITH, ADAM: *The theory of moral sentiments*	London, 1759	Philadelphia, 1817 Boston, 1817
An inquiry into the nature and causes of the wealth of nations	London, 1776	Philadelphia, 1789

For full information see the catalogue of The Vanderblue Memorial Collection of Smithiana.

BENTHAM, JEREMY: *A defence of usury*	London, 1787	Albany, 1837 New York, 1837
An introduction to the principles of morals and legislation	London, 1789	New York, 1830
STEWART, DUGALD: *The elements of the philosophy of the human mind*		
Vol. I	London, 1782	Philadelphia, 1793
Vol. II	London, 1814	Boston, 1814
Vol. III	London, 1827	Philadelphia, 1827
GODWIN, WILLIAM: *An enquiry concerning political justice*	London, 1793	Philadelphia, 1796
MALTHUS, THOMAS ROBERT: *An essay on the principles of population*	London, 1798	Georgetown, D.C., 1809 (from 3rd London ed.)
Principles of political economy	London, 1820	Boston, 1821
THORNTON, HENRY: *An inquiry into the nature and effects of the paper credit of Great Britain*	London, 1802	Philadelphia, 1807
SAY, JEAN-BAPTISTE: *Traité d'économie politique*	Paris, 1803	Translation: Boston, 1821
Catéchism d'économie politique	Paris, 1815	Translation: Philadelphia, 1817
SPENCE, WILLIAM: *Britain independent of commerce*	London, 1807	Philadelphia, 1808
GANILH, CHARLES: *Des systèmes d'économie politique*	Paris, 1809	Translation: New York, 1812
OWEN, ROBERT: *A new view of society*	London, 1813	Cincinnati, 1825 New York, 1825
An address delivered to the inhabitants of New Lanark on the first of January, 1816	London, 1816	Cincinnati, 1825 (from 4th London ed.)
HAMILTON, ROBERT: *An inquiry concerning the rise and progress, the redemption and present state, and the management of the national debt of Great Britain*	Edinburgh, 1813	Philadelphia, 1816
MARCET, MRS. JANE (HALDIMAND): *Conversations on political economy*	London, 1816	Philadelphia, 1817 New York, 1820
*John Hopkins's notions on political economy**	London, 1833	Boston, 1833

* Published anonymously.

	Original Publication	American Printing
RICARDO, DAVID: *On the principles of political economy and taxation*	London, 1817	Georgetown, D.C., 1819
MCCULLOCH, JOHN RAMSAY: *Interest made equity.* Republication of article contained in the Supplement of the Encyclopedia Britannica (1824)		New York, 1826
Outlines of political economy. From the Supplement to the Encyclopedia Britannica (1824)		New York, 1825
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** Translated by Jefferson.

Note on Modern Welfare Economics

This comment on the current state of welfare economics was inspired by a reading of Kenneth J. Arrow's splendid work *Social Choice and Individual Values.*[1] That notable book represents, in a sense, the acme of the modern approach to welfare economics, the so-called "new welfare economics."[2] It deals, like most contributions to this subject, with the problems of defining the welfare of a society and of ordering the various possible states of a society according to their "desirability" under that definition. As usual, also, the most obstreperous difficulties arise in the attempt to translate a set of taste-structures of individuals into a "taste-structure" of the society as a whole. The famous question of the interpersonal comparability of utilities is only one of these difficulties. But Arrow differs from most of the other approaches to this problem area by the use of a set of considerably more powerful and general concepts. For example, he follows the lead of Bergson in considering under the caption of welfare not only the attitudes of individuals toward their *own* actual and possible possessions, but also their attitudes toward many other happiness-determining aspects of the world, such as the possessions of

[1] New York, John Wiley, 1951 (Cowles Commission Monog. No. 12).

[2] More accurately, it is the acme of the *static* version of the new welfare economics.

other individuals, the collective activities of the group, moral and esthetic considerations, the prevailing "social welfare function," the political situation, and many others. Individuals, in other words, are regarded as ranking all the possible states of the world into a preference order, where their criterion of preference can be, as far as the economic analyst is concerned, anything at all (assuming only that it is unambiguous, consistent, and exhaustive).[3] Arrow then proceeds to a discussion and evaluation of the various possible methods of deriving social orderings from the individual orderings.[4] It is this investigation of the properties of social welfare functions, an exceptionally well-thought-out one, which is his main contribution.

As has been said, the book presents the new welfare principles in their most general form yet. But, just because it lays bare so clearly the basic structure of those principles, it also serves to highlight a very sad and disappointing fact about that entire school of welfare economics, namely: the principles of welfare developed by this school are, *in their present form*, utterly useless as guides to the formulation of sensible economic and social policy. They are constitutionally incapable of helping us to distinguish between welfare-increasing and welfare-decreasing *policies*. In the case of welfare economics this type of shortcoming is very serious indeed; the entire *raison d'être* of this discipline is its promised rôle in policy formation.

The critical point is this: The new welfare economics considers the individual orderings of social states, R_i, to be *constants* rather than *variables*. All of its principles assume these R_i to remain invariant; and therefore all policy recommendations based upon these principles also assume, implicitly, that the individual orderings remain unaffected by any and all actions that may be taken with respect to the economic system. As a simple example, consider the well-known policy rule that the "best" disposition of income is that which equalizes the marginal utility of a dollar in the various possible lines of expenditure. This rule assumes that the shape of the utility surface of an individual is unaffected by the act of re-allocating his income. Another example: Arrow, in his analysis, assumes that the individual orderings, R_i, of individuals are entirely independent of the form of the social welfare function adopted (and of the policies based upon that social welfare function).

Before going on to the reasons why the assumption of constancy in the individual orderings is so damaging, let us first be clear on the fact that the orderings of social states in the minds of individuals are in reality quite variable, even volatile. No rigorous demonstration of that fact will be attempted here—we need only to recall to mind a few of the rather well-established principles of psychology. Human beings are constituted in such a way that their current attitudes—all their current attitudes—are always determined by both their physical bodily structure (including, of course, the structure of the experience-modified nervous system) and the immediate environment as per-

[3] In conventional welfare analysis, individuals are considered to rank the various states of the world only according to the amount and type of goods accruing to themselves under each of these states.

[4] A method of arriving at a social ordering is called a "social welfare function." The method of majority decision is one example of a social welfare function.

ceived by them. The attitudes therefore change in response to changes in these determining factors. Attitudes toward consumer goods, for example, are variable with respect to such environmental factors as the present weather, the actions of friends and of rivals, the social codes of behavior, the conditions of work and of leisure, the blandishments of the sellers of goods, etc. Quite important also, a person's attitude toward goods is determined in large measure by the assortment of goods which is at present in the visual field of the individual—the desire to possess a given object often arises or becomes intensified upon such physical sense-perception. These facts are no mystery to businessmen and politicians; the former, for example, usually endeavor to shift the preference maps of individuals in a way favorable to themselves by engaging in such activities as attractive packaging, window display, scare advertising, "getting the customer to try on the suit," flattery, wining and dining prospects (to get them into a "receptive mood"), etc. Politicians use equivalent techniques to alter the political preferences of the individuals in their constituency. Generalizing a bit, we can say that the orderings of individuals are variable, and that they are quite sensitive to changes in the environment, whether these changes were brought about by the purposive designs of other individuals or by just the "general course of events." As the world changes so does the environment of any given individual, and as the environment changes so does that individual's ordering of the various possible states of the world. And the world never stands still—the only permanent thing in the world is continual change. Preference maps therefore don't stand still either; a state of continual transformation is their normal condition. They are not fixed rigid structures but rather are very plastic, even fluid entities.

It has been recognized a number of times in the fairly recent past that this empirical fact is a fact and that it introduces difficulties into the traditional form of economic analysis. The point has cropped up most frequently in discussions on the theory of choice and demand. For example, J. M. Clark calls attention to it as early as 1918,[5] and discusses it quite explicitly in his more recent article "Realism and Relevance in the Theory of Demand."[6] T. Haavelmo, as another example, is on much the same ground when he refers to the irreversibility of the demand function.[7] In response to the challenge posed by these and other criticisms,[8] several theorists have attempted the task of liberating demand theory from the infirmities that beset the concept of a preference map. They have usually done this by short-circuiting the preference maps entirely, and, instead of using preference maps as codeterminants of demand (with prices), going back to the variables which presumably govern the shapes of those maps. Georgescu-Roegen,[9] for example, suggests that we consider, besides the current prices of the various commodities, their *past* prices. His point is that past prices influenced past consuming behavior, and

[5] "Economics and Modern Psychology," *Jour. Pol. Econ.*, Jan. 1918, XXVI, 1-30.

[6] *Jour. Pol. Econ.*, Aug 1946, LIV, 347-53.

[7] "The Probability Approach in Econometrics," Suppl. to *Econometrica*, July, 1944, XII, 17-21.

[8] and also in order to build the theory upon directly observable variables,

[9] "The Theory of Choice and the Constancy of Economic Laws," *Quart. Jour. Econ.*, Feb. 1950, LXIV, 125-138.

that past experiences determine the present attitude toward goods. Duesenberry[10] points out that we need to consider past incomes as well as present incomes because current consumption habits have been formed in the past and are therefore the result of the previous standard of living. He also shows that we must pay attention to the consumer's *relative* position with respect to the distribution of income. Other writers recommend the inclusion of other variables in the demand function, such as the rate of interest, expectations of future prices and of future incomes, present and past advertising expenditures, current stocks of goods, cash holdings, and others.

Let us now return to welfare economics. It follows from the fact that preference maps are as volatile as they are that any *particular* factor in the world which affects the environment of a given individual, whether directly or indirectly, also affects his ordering of the states. It is consequently fairly safe to say that *any* given governmental action or policy tends to remold the preference maps of the individuals in the society. Because of the tremendously complex pattern of interconnections in our socio-economic system it seems impossible to predict precisely *how*, say, a new tax law will affect the preference map of the present reader, but we can be quite sure that *some* effect will occur. As far as we know, it is not only unlikely that any given preference map remain constant during a particular governmental program, but in view of the indirect effects of the program on that preference map, it is entirely *impossible* that this should ever take place.

With that we come to the central point. Suppose that the economy is in a given position and the orderings of individuals are of given shapes. The government now wants to increase the welfare of the group by adopting a given action A_0. (It doesn't matter here what the action A_0 is. It may be an economic reorganization, it may be the adoption of a particular social welfare function, or it may be anything else at all.) If now, as is usually taken for granted, the shapes of the individual orderings remain undisturbed throughout, then it is possible, at least in principle, to determine whether the policy has increased or decreased welfare. But, as we have seen, the orderings *will* change. The result is that now it is utterly impossible to ascertain, for any individual or for the group as a whole, whether welfare has increased or decreased. Indeed, the question becomes *meaningless. Welfare comparisons are defined only for given fixed orderings*: an increase in welfare is defined as a shift to a preferred position (*preferred according to that ordering*), and a decrease in welfare is defined as a shift to a position which is, *in that ordering,* inferior. There is no meaningful way, in terms of the concept of welfare that is the basis of the new welfare economics, in which the well-being of a given individual or of a society at time t_0 can be compared to the well-being at time t_1 when the preference map at t_1 is *not* the same that it was at t_0. It is meaningless, to take an extreme example, for the reader to ask himself whether he is more or less happy now than he was when he was four years old. It is equally meaningless to ask, for much the same reason, whether people were more or less happy thirty years ago than they are now. If, thirty years ago, people had had the

[10] *Income, Saving, and the Theory of Consumer Behavior* (Cambridge, Harvard University Press, 1949).

same preference maps that people have today, then clearly they would have been much less happy in those days—they would have missed their television sets terribly. Fortunately for them, however, their preference maps were different. But unfortunately for the modern welfare economist, he has, as a result, no way at all of comparing, in his conceptual scheme, the welfare then and the welfare now. And the same fact holds for any lesser degree of change in the preference maps of individual persons—as long as there is *any change at all* welfare comparisons are undefined and therefore meaningless.

It seems quite difficult to reformulate the ordinal concept of welfare in such a way as to yield a serviceable tool of policy formation. What is required, of course, is an ordering of states of the world which holds over time, and which will thereby permit comparisons between two states of the world which occur at different points of time. Such an ordering is not easy to come by—the set of tastes and attitudes of the individual, for the reasons stated, does not provide this ordering. The task of primary importance here is the redefinition of the *individual* orderings; the *social* orderings, being derived from individual orderings, are logically a secondary problem. There is one method of solving the problem which is *not* open to us here. We cannot in welfare economics, as is being done in demand theory, resort to the expedient of by-passing entirely the question of the structure of individual tastes and preferences; welfare economics—unlike demand theory which is essentially descriptive and which therefore can quite properly choose the most convenient method of description—is directly concerned with the degree of satisfaction of these preferences, and hence must face the problem squarely.

As a small contribution to the necessary attempt of placing welfare economics on a realistic and solid foundation, there will now be presented two different suggestions for defining changes in the welfare of an individual in a useful way (or, at least, a potentially useful way). We shall employ, with a few adaptations and additions, the terminology worked out by Arrow.

(a) The various possible states of the world[11] are denoted by the symbols $x_1, x_2, x_3, \dots$.

(b) The various possible orderings of the states of the world in the mind of individual i are denoted by $R^1_i, R^2_i, R^3_i, \dots$.

(c) The various possible actions of the government (or of any other policy making agency) are denoted by $A_0, A_1, A_2, A_3, \dots$.

(d) Each ordering R^j_i of the x's is such that, for any x_r and any x_s, one of the following holds true:
   1. x_r is preferred to x_s [$x_r\ P^j_i\ x_s$].
   2. x_r and x_s are indifferent [$x_r\ I^j_i\ x_s$].
   3. x_s is preferred to x_r [$x_s\ P^j_i\ x_r$].

(e) Each action A_m has *two* effects.
   1. It changes the state of the world from some x_r to some x_s.
   2. It changes the ordering of each individual i from some R^j_i to some R^k_i.

We make the simplifying assumption that both of these effects are pre-

[11] A "state of the world" is a point in the space of all the welfare-influencing variables, excepting only the ordering R_i itself.

dictable, or, at least, ascertainable *ex post*. This is, of course, a very strong assumption. It is justified only if it helps to clarify some of the basic ideas.

Suggestion 1:

Assume that the government carries out the action A_0. A_0 changes the state of the world from x_1 to x_2, and the ordering of individual i from R^1_i to R^2_i. The question: Has A_0 increased or decreased the welfare of individual i?

In some special cases this question can be answered quite unambiguously. If x_2 is preferred to x_1 under *both* the original ordering and the new ordering, *i.e.*, if $x_2\ P^1_i\ x_1$ and $x_2\ P^2_i\ x_1$, then A_0 has unquestionably increased the welfare of i. Similarly, if x_2 is less desirable than x_1 under both orderings, *i.e.*, if $x_1\ P^1_i\ x_2$ and $x_1\ P^2_i\ x_2$, then A_0 has clearly decreased the welfare of i. And if x_1 and x_2 are indifferent under both orderings, *i.e.*, if $x_1\ I^1_i\ x_2$ and $x_1\ I^2_i\ x_2$, then the welfare of i has been unaffected by A_0.

But suppose now that $x_2\ P^1_i\ x_1$ and $x_1\ P^2_i\ x_2$, in other words, that before A_0 was adopted x_2 was preferred, but that afterwards x_1 is preferred. As a result of the action A_0 (or even as a result of entirely different forces) the tastes of i have so changed in the interval between x_1 and x_2 that he now prefers the original state. In this case there is no clear-cut way in which we can say that i's welfare has either increased, decreased, or has remained unchanged. We might well, therefore, coin a new word to describe what has happened: the action A_0 has been *welfare-abortive* insofar as individual i is concerned.

A closely similar situation prevails if $x_1\ P^1_i\ x_2$ and $x_2\ P^2_i\ x_1$, that is, if i prefers the old state before A_0, and the new state after A_0. He is happy under both circumstances. We might say that, in this case, A_0 has been *welfare-neutral* for individual i.

There are altogether nine possible ways in which old comparisons and new comparisons between x_1 and x_2 by individual i can be combined. We can represent these by the following tabulation:

		Post-A_0 Ordering: R^2_i		
		$x_1P^2_ix_2$	$x_1I^2_ix_2$	$x_2P^2_ix_1$
Pre-A_0 Ordering: R^1_i	$x_2P^1_ix_1$	Welfare-abortive	Welfare-nondecreasing	Welfare-increasing (strong)
	$x_1I^1_ix_2$	Welfare-decreasing (weak)	Welfare-indifferent	Welfare-increasing (weak)
	$x_1P^1_ix_2$	Welfare-decreasing (strong)	Welfare-nonincreasing	Welfare-neutral

The terms within the nine squares are descriptive of the nine possible welfare-effects of action A_0 on individual i. Note that these terms denote properties of A_0, *not* of the orderings.

In order to decide, now, if A_0 is *socially* beneficial, we must have a technique for deriving the "social welfare-effect" of A_0 from the various individual welfare-effects. In this connection all the old difficulties of "the individual vs. the society" arise again. The work of Arrow, therefore, transformed to apply to the redefined individual-welfare ideas, can be of great value here.

A transformed social welfare function will ***not*** lead to a ***"social ordering"*** *of the x's,*—it will result in a *social evaluation of the A's.* This shift in the point of view is important. An ordering of the x's is entirely valueless as a guide to action: different ways of reaching a given x_s will shift the R_i in different ways, and the resultant evaluation of x_s with respect to an earlier x_r is therefore not unique.

Before leaving the discussion of this suggested redefinition of individual welfare, we can make one more comment on the tabulation of individual welfare-effects. It is quite possible that the government may attach a greater value to the post-A_0 orderings, $R^2{}_i$, than to the pre-A_0 orderings, $R^1{}_i$. A_0, for example, may be a political revolution, and $R^2{}_i$ may represent the post-revolutionary (and post-propaganda) mentality, whereas $R^1{}_i$ is the pre-revolutionary mentality. Considering this additional axiological criterion, and keeping all of our original definitions, the tabulation of welfare-effects of A_0 would now look like this:

		Post-A_0 Ordering: $R^2{}_i$		
		$x_1P^2{}_ix_2$	$x_1I^2{}_ix_2$	$x_2P^2{}_ix_1$
Pre-A_0 Ordering: $R^1{}_i$	$x_2P^1{}_ix_1$	Welfare-decreasing	Welfare-indifferent	Welfare-increasing
	$x_1I^1{}_ix_2$	Welfare-decreasing	Welfare-indifferent	Welfare-increasing
	$x_1P^1{}_ix_2$	Welfare-decreasing	Welfare-indifferent	Welfare-increasing

A final word about this general scheme of analysis: It is entirely ***static.*** To be applied to a dynamic world, all these concepts need obviously to be generalized. Instead of "actions" we should be talking about "courses of action over time"; and instead of "states" of the world, we should be considering "sequences of states."

Suggestion 2:

We can enlarge our definition of the set of "states of the world," for any given i, to include all points in the larger space (x_m, R^j_i). In other words, we make the individual ordering a part of the specification of the state of the world, and we permit the variable, R_i, to assume all of its possible values. Thus (x_1, R^1_i) and (x_1, R^2_i) are two different states of the world, as are (x_1, R^1_i) and (x_2, R^1_i), and, more generally, (x_1, R^1_i) and (x_2, R^2_i).

We may now, in a purely formal way, assume the existence of an *absolute* ordering of states of the world for individual i, R^J_i. This ordering is defined for any two of these "complete" states of the world no matter when they occur, and it can therefore be used as a measure of changes in the welfare of individual i, whether it be brought about by an action A_0 or by the natural course of events.

Does such an ordering exist in actuality? Can we really make a direct and absolute comparison between the welfare of a given person today and his welfare 20 years from now, when his tastes and attitudes will have been radically changed? The answer to these questions is not yet available to us. This absolute ordering would very likely have to be derived from *physiological* measurements of some sort, possibly, for example, from the "size" of chemical disequilibria within the body of the person. We have no choice but to await the future findings of biological science on this point.

If, however, such an absolute ordering is ever discovered, then the subsequent developments in welfare economics will almost surely follow the path blazed by Arrow.

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Comparisons of Government Expenditures With National Income

In writing for the general public about the burden of taxes, or government expenditures, economists and statisticians are confronted at the outset with an awkward question. What sort of measure should they use to indicate the size of the burden? Professional scruples keep them from falling back on such colorful comparisons as those commonly employed by advertising copy writers and luncheon club speakers, *e.g.*, "the government spent a sum last year which is equal to the value of all the farm land in the United States," or, "if you had spent a dollar each second from the time Columbus landed to the present, the total would equal only two months' spending by the Federal government at its present rate," etc. On the other hand, their readers are likely to be confused and dissatisfied if presented with one of the carefully qualified comparisons used in the more technical literature of the subject; comparison, for instance, of "government purchases of goods and services" with "gross national product" or of "personal tax payments" with "personal income." The

general reader, quite understandably, wants a single comprehensive measure which he can grasp without delving into the mysteries of national income and product analysis.

It might seem that the answer is simply to express taxes, or expenditures, as a percentage of national income. This is, in fact, still common practice. The Bureau of the Budget, for instance, in its generally excellent little pamphlet, *The Federal Budget in Brief*,[1] has a section showing "Budget Expenditures as a Percentage of National Income." Lincoln, Stone, and Harvey, in their *Economics of National Security*,[2] one of the outstanding textbooks on that subject, open the chapter on war finance with a table showing "Federal Expenditures as a Percentage of National Income." Many other examples could be cited, including Colin Clark's much discussed proposition that "the critical limit of taxation is about 25% of the national income, or possibly rather less."[3]

Measuring the burden in this way has some great advantages. It not only yields a single, comprehensive figure, it also corresponds to the concept which the layman, who is unacquainted with the complexities of national income accounting, has of the matter. He "knows" that he has to turn over a certain proportion of his own individual income to the government.[4] What he would like the statistician to tell him is how much of all our incomes put together the government is taking in taxes (or taxes plus borrowing).

I hesitate to criticize the statisticians and economists who use a measure that is so simple and convenient and that fits in so well with what their readers want and expect. If the Budget Bureau, for instance, substituted a chart showing "Government Purchases of Goods and Services as a Percentage of Gross National Product" for its "Budget Expenditures as a Percentage of National Income," some readers would be puzzled and irritated, others would fail to notice the difference, and still others, seeing the large discrepancy between "budget expenditures" and "government purchases of goods and services" would suspect some politically motivated trickery on the part of the Bureau.

While it is easy to sympathize with the desire to avoid such confusion and criticism, it is important, I think, to realize that a comparison of government

[1] "For the Fiscal Year 1953," pp. 36-37. Budget expenditures require some adjustment to make them fit into the scheme of the national income and product accounts. The necessary steps are explained with admirable clarity in the March, 1952 issue of the *Survey of Current Business* (p. 14) and need not detain us here. Even when the adjustment has been made, however, the problem of what to compare expenditures with to give the man in the street the simple picture of the burden of government finance he wants remains unsolved.

[2] G. A. Lincoln, W. S. Stone, and T. H. Harvey, *Economics of National Security* (New York, 1950).

[3] "Public Finance and Changes in the Value of Money," *Econ. Jour.*, Dec. 1945, LV, 376.

[4] If we include indirect taxes, it is by no means so simple as this. One look at the chapter on shifting and incidence of taxes in any economics textbook should be enough to convince the taxpayer that he has no precise idea at all as to what proportion of his income goes to the government.

expenditures, or taxes, with national income may be seriously misleading. This can be seen most clearly by examining a hypothetical case such as the following:

Suppose the United States had had the misfortune several years ago to become engaged in an all-out war and that economic mobilization had reached the point by 1951 where government (all levels included) was absorbing 50 per cent of the Gross National Product for military and essential civilian purposes. Assume also that, taking a leaf out of the Russians' book, we had decided to adopt a general turnover tax as the mainstay of our war finance.[5] And, finally, assume that controls had been effective enough to keep factor prices from rising above their actual 1951 levels. Allowing for the considerable increase in the prices of goods bought by consumers, government, and business, which would be caused by the high turnover tax, our national product figures might look something like this:

	All-out War	*1951 Actual*
Gross national product	440	329
Government purchases of goods and services	220	63
Gross private investment	40	59
Consumption	180	208

The $180 billion for consumption would be equivalent to some $130-$140 billion at 1951 prices. With reasonably effective allocation and distribution controls this would be adequate to maintain wartime health and efficiency of the civilian population. The $40 for private investment would be enough, even at the higher prices assumed in the model, to maintain capital intact.

The relation between gross national product and national income can be derived from our assumption that factor prices are approximately the same as in 1951[6] and that private investment expenditure is sufficient to cover capital consumption:

Gross national product		$440
less	Capital consumption allowances	40
	Indirect taxes	150
	National Income	$250

This is approximately the same as national income in 1951 after deducting corporate profits tax liability, which in our model is absorbed by the general turnover tax.

[5] For convenience I assume that corporate profits taxes are made part of the turnover tax. This would perhaps be more a change in name than in substance. A good case can be made for the view that, at their present high level, corporate profits taxes have the effect chiefly of increasing the spread between costs and prices.

[6] To simplify the argument I have made the unlikely assumption that there is no increase in total factor renumeration as a result of longer hours or of shifts from one occupation to another.

To obtain total government expenditures we must finally make some assumption about transfer payments. Everything considered, especially the higher prices and increased veterans' payments which would be concomitants of a war economy, $30 billion is a likely enough figure. Added to the $220 billion for goods and services, this would give us total government expenditures of $250 billion.

The dilemma of the textbook or pamphlet writer now becomes painfully evident. As long as our arithmetic shows government expenditures to be 12 per cent or 25 per cent—or even, as in World War II, 53 per cent[7]—of National Income, most people will accept the figure without question, assuming that it means just what it seems to mean, *i.e,* that the government "takes" that much of our aggregate income and that 88 or 75 or 47 per cent is what is "left over" for consumers and for private business investment. If government expenditures were 100 per cent of national income there would, according to this view of the matter, be nothing left over, and consumers would either have to starve or live on the nation's capital. Our model shows, however, that it would be quite possible for government expenditures (which could, of course, be balanced by tax revenues) to equal 100 per cent of national income and yet leave enough "over" to maintain capital intact and provide consumers with a flow of goods adequate to maintain health and efficiency. In this case it would be clear to everyone that there is something wrong with the usual interpretation of the government expenditures-national income figure.

Actually, of course, two things are wrong: (1) government purchases are made at market prices which are affected by indirect taxes, while national income equals the value of output at factor prices, which exclude indirect taxes; (2) government expenditures include transfer payments, which, since they are not "earned," are excluded from national income. Thus it is legitimate to compare government expenditures with national income only in an economy where there are no indirect taxes and no transfer payments. Given either or both of these items a figure showing that government expenditures are 50 per cent or 25 per cent of national income is of no less uncertain meaning than the 100 per cent figure of our model wartime economy. The only difference is that in the latter case the difficulty of interpretation is obvious, whereas in the former it may be hidden.

What is the moral? In particular, what should we say to the man in the street who wants a simple answer to what seems to him a simple question? I cannot see any solution that will satisfy the demands both of simplicity and of accuracy. We seem to be up against the familiar task of convincing people that things are more complicated than they seem to be. As economists we cannot but look with suspicion at any simple comparison of government expenditures, or taxes, with national income. Perhaps it is up to us to see to it that that suspicion spreads as widely and as rapidly as possible.

ALAN SWEEZY*

[7] *Cf.* Lincoln, Stone, and Harvey, *op. cit.*, p. 359.

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A General Theory of the System of Multilateral Trade: A Comment

In his interesting article, K. E. Hansson[1] presents a useful addition to trade theory. Developing Ohlin's work further, Hansson's paper is helpful in relating conceptually the structure of production—conceived in terms of the relative abundance or scarcity of different factors of production—in different groups of economies, to the anticipated and actual pattern of trade between these groups of economies over different periods in their development. The paper thus sheds light on the way in which complementary patterns of factor distribution facilitate the multilateral clearance of international accounts.

While recognizing the importance of his paper, I nevertheless believe Hansson has erred on several significant points of omission and emphasis:

1. Hansson begins his "general theory" with the broad statement that "international trade takes place in response to the unequal distribution of the factors of production" (p.61). This is, obviously, a relevant generalization but, at least in its present form, misleading. Adam Smith attributed the flow of trade to the gains from international specialization and division of labor. This *need* not—though it *may*—conflict with Hansson's generalization. Consider, for example, the economic development of that group of underdeveloped economies referred to by Hansson as "The Tropics" (p. 59). As their economic development proceeds, the structural relationship between the factors of production—measured in terms of machinery per worker or per square kilometer, which are the indexes suggested by Hansson—may be expected to move in the direction prevailing in the more developed economies; in other words, the supply of capital in the Tropics may be expected to increase relative to the supply of land and labor. Does this mean that the stimulus to trade between the Tropics and the more developed areas will diminish because capital in the Tropics comes into relatively "moderate" or "ample" supply, and hence there is less inequality in factor distribution? Hansson's initial generalization would appear to imply that a more equal distribution of factors of production will restrict trade. Presumably an exactly equal relative distribution of factors of production would eliminate trade entirely among the economies concerned. This conclusion would appear to be inescapable if trade is presumed to depend solely on inequality of factor distribution. I submit that this is unacceptable. Even with a similar productive structure in terms of a similar relative abundance or scarcity of the same basic factors, it will still be profitable for the factors to be concentrated on the production of some commodities in one country, others in a second country, and for surpluses to be traded. The classical arguments on the gains from international division of labor are obvious and familiar and need not be elaborated. However, they represent a separate stimulus to trade which is lacking in Hansson's schema.

2. In Hansson's simplest case (pp. 61 and 63), capital-intensive goods are bought by economy A, which is short of capital but rich in labor, from economy C which is short of land and rich in capital; economy B, which is rich in land but short of labor, buys labor-intensive goods from A; and

[1] K. E. Hansson, "A General Theory of the System of International Trade," *Am. Econ. Rev.*, Mar. 1952, LXII, 59-68.

economy C buys land-intensive goods from B. Triangular clearance follows. It should, however, be noted that there is nothing in this model which warrants the inference that the clearance will be complete, *i.e.*, that the trade surplus and deficit of each country with its respective trading partners will balance out. Even in this simplest case, and given the complementary inequalities in factor distribution among the economies concerned which the model assumes, balance-of-payments difficulties may exist, and multilateral clearance may be impaired. It is difficult to see how a theory of multilateral trade which ignores such questions as supply and demand elasticities, commercial and foreign exchange policies, and the important relationships between these considerations and the multilateral clearance of trade accounts can pretend to be "general."

3. Hansson's formulation also seems to assume technological stasis. Consider further the simple model referred to above, which Hansson subsequently modifies (pp. 64, 65, 67) to admit into the system additional trading partners with different relative supplies of the basic factors. What will happen if each of the economies comes to have the same or more nearly similar relative supplies of the basic factors? Hansson's reasoning would suggest that they will be less likely to trade because the "pulling force" in the system will be attenuated.

I would suggest they may still trade, and they may still trade the same kinds of goods. What were originally labor-intensive goods (*e.g.*, rubber) under the technological conditions prevailing when the system took the form referred to in (2) above, may—assuming favorable climatic conditions—be produced by economy A under more advanced technological conditions with relatively more capital and less labor. Similarly, what were land-intensive goods under the original technological conditions, *e.g.*, grains and wool, may under more advanced technological conditions be produced by economy B using more capital and less land. This would be the case, for example, where construction of large irrigation facilities (capital) permits the cultivation of several crops from the same land where formerly only one crop was raised, thereby "economizing" land. With changing technology, the over-all pattern of factor distribution may become more nearly alike and yet specialized production and trade may still continue and grow.

4. An important element left out of Hansson's "general" theory is the income aspect of trade determination. The possible dampening effects on trade from a more equal distribution of factors may be more than offset by the higher income levels which accompany the attainment of the new pattern of factor distribution. This would generally result in a net growth in trade even though the relative scarcity or abundance of different factors were to become more nearly alike in the developing and the more developed economies. It has, for example, occasionally been suggested that the recent textile slump in Lancashire has been partly due to reduced Indian imports because of increased textile production arising from higher investment in textile equipment within India. But consider what a 1 per cent rise in Indian money income would do to expand textile demand *both* for Indian production and Lancashire imports.

If one accepts Hansson's thesis, then the inference would be warranted that

as underdeveloped areas acquire more capital in relation to labor and land, the incentive to trade would diminish. This would mean that efforts to promote the flow of public and private capital from developed to underdeveloped areas (which in turn implies a tendency to more nearly balance the relativity of factor distribution in underdeveloped and developed economies) would not be conducive to expanding world trade. In other words, if world trade thrives on unequal factor distribution, measures tending to balance such distribution would tend to diminish and discourage trade. This would in turn imply that there would be a tendency for an international economic policy of promoting the outflow of capital from developed economies to impede or interfere with an international economic policy of expanding international trade. I see no tendency in this direction. The fact, for example, that Canada's trade with the United States over the past two decades has been expanding in both directions in real terms at the same time that Canada's pattern of factor distribution has been coming closer to that of the United States, indicates empirically that there is considerably more involved in determining trade pattern and volume than the relative distribution of the basic factors of production.

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The Dilemma of Antitrust Aims: Comment

Professor Adams' excellent paper on the antitrust case against the Aluminum Company of America[1] suggests a few thoughts about the implications and significance of antitrust activities, and specifically about the idea of competition in our time.

He laments the fact that thirteen years of antitrust litigation failed to result in some sort of "dissolution, divorcement, or divestiture" of Alcoa, in short, in "the kind of physical reorganization of the industry necessary to bring about a competitive structure consistent with the objectives of the Sherman Act." Although they have refused to reorganize the industry—or specifically to atomize Alcoa— the federal courts have retained jurisdiction of the case until 1955, at which time the government may petition for additional relief if competition has by then not improved, or probably more accurately, if it has deteriorated. By this action, Adams quite rightly observes, the District Court has placed Alcoa on a five-year probation during which the latter will undoubtedly follow the policy so effectively employed by other monopolistic companies in the past of "live and let live," of "avoiding any aggressive or expansionary" activity which might give the government a basis on which to press for dissolution, divorcement, or divestment in 1955. At the end of the probationary period the case will probably be closed, and Alcoa will remain intact, powerful, and domineering. A precedent sanctioning the aluminum type

[1] Walter Adams, "The Aluminum Case: Legal Victory—Economic Defeat," *Am. Econ. Rev.*, Dec. 1951, XLI, 915-22.

of integrated industry will have been established, with the "Big Three's" and the "Big Four's" cheerfully riding in on its tail to make a mockery out of our competitive system. This, Adams vigorously contends, is bad economics, bad public policy, and besides is not in keeping with the Sherman Act.

All this may be true, as far as the analysis goes. But it must go further. While business leaders may not do a good job of making the point, there *is* something to their charge that antitrust activities of the aluminum kind tend to punish efficiency, size, and success. As a matter of public policy we want business to compete, but we do not want any one producer (or any three in a given industry?) to win the competition. We want the kind of competition which does not lead to monopoly, and we behave as if there were a benevolent natural law according to which it is not in the nature of things for someone to win the competition. As if to give this law a helping hand, we devise public policies to discourage anyone from winning the competition and to punish anyone who does win it. Yet at the same time we do not wish to discourage the enterprise, dynamism, and even scheming that make for getting competitive advantage—in short, for winning competition and creating monopolistic or tight oligopolistic situations. In a word, we wish to preserve competition but face the anomolous situation of punishing its most successful practitioners and of destroying those ingredients of competition that make competition possible and desirable.

One need not approve of the many iron-fist-in-velvet-glove techniques of big business in order to sympathize with its problems. Because of the increasing automaticity of the modern technology, because of the fantastically increased capital requirements, we should therefore not be surprised or alarmed at having more numerous three-producer, two-producer, or even one-producer industries. Electronics and atomic energy will hasten the necessity and inevitability of such industries, as the electrical revolution of the 1910's and 1920's so greatly helped increase industrial concentration then. The Sherman Act (as well as its patchwork progeny, the Clayton Act) was a reaction to the economic concentration that resulted from the leviathan of shady financial manipulations, immoral intrigue, and primitive aggrandizement of power. But today's concentration is the more-or-less inevitable consequence of a new and amoral leviathan—monster technology. Yet we continue to invoke the ethics of a horse and buggy antitrust law to the situation of a hot rod industrial society. The result is legalistic confusion and uncertainty and the possible eventual degeneration of the economic system.

Perhaps the "go-getting" component of the American business culture will survive antitrust attacks and provide a continuous stream of highly motivated business leaders, but it is not inconceivable that a series of successful prosecutions over a number of years of the type attempted in the aluminum case may throttle the dynamism of American capitalism, reducing competition to a sort of verbalistic remains of the real thing, to torpid manipulation of the symbols of competition in a system that is devoid of really dynamic creative activity.

We cannot have "old fashioned" intra-industry competition (or what appears for many to pass for the same thing, namely "workable competition") without reasonably expecting somebody to win or nearly win that competition.

And we cannot have a policy designed to prevent such winning of competition that does not throttle the very thing the policy pretends to promote. This dilemma calls for a fresh approach to the antitrust problem. Two things may be said in that connection. First, the failure of a dominant producer to use his power to destroy his competitors is not, as Adams seems to suggest, a meaningless subterfuge designed to mollify the courts. Self-restraint is precisely what we expect the antitrust laws, and indeed all laws, to elicit. It does not follow that simply because an assailant is big and powerful his actions are therefore malicious. Perhaps what is needed is not to bring the assailant to trial, but to redefine our concepts of assault and competition in a way more nearly consistent with the necessary and inevitable structure of modern industry and society.

The second point that may be made in connection with the dilemma we face in trying to prevent someone's winning competition without destroying that which is a precondition to competition and which makes competition desirable, is that the Sherman Act should be replaced by a system of laws that recognizes the technological inevitability of monopoly and oligopoly in modern industry. It becomes increasingly more evident that the Sherman Act, with its implied suggestion of dissolution, divorcement, and divestiture, rigorously applied can destroy what is most precious about the system it naïvely tries to safeguard and preserve. The morality of the Sherman Act is anachronistic. We need to make a fresh start in our thinking about big business, competition, and business ethics and the kind of public policy we should have in connection with them. A profitable beginning might explore the wisdom and possibility of treating our "Big Three's" and "Big Four's" as new forms of modified public utilities, inevitable, desirable, but regulatable in a manner that preserves their dynamism, encourages their innovational drive, and makes them socially responsible. A public member or two sitting in on top-level strategy and policy meetings of the big producers and distributors may be able to do more by way of preserving and promoting enterprise, honesty, and efficiency in big business, and do more to preserve the kind of economy we seem to want than all the Victorian proscriptions of our present antitrust laws.

THEODORE LEVITT*

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Reply

In commenting on my study of antitrust action in the aluminum industry, Mr. Levitt once again raises the perennial question of the relationship between technology, size and efficiency. He contends that—given the "automaticity of modern technology" and the "fantastically increased capital requirements" concomitant therewith—we should not be surprised or alarmed at having more numerous three-producer, two-producer, or even one-producer industries. On the basis of his belief that today's economic concentration "is the more-or-less inevitable consequence of a new and amoral leviathan—monster technology," he then concludes that "the Sherman Act should be replaced by a

system of laws that recognizes the technological inevitability of monopoly and oligopoly in modern industry." Since Levitt's policy conclusion is merely derivative, I shall confine my remarks mainly to his basic assumption that giant industrial size is primarily the outgrowth of a 20th century technology which compels firms to be big in order to be efficient.

So far as I know, no scientific study has yet demonstrated that giant size is imperative for the optimum utilization of modern technology or the attainment of efficiency in mass production industries.[1] Indeed, some of the recent evidence has tended to point in the opposite direction. Fragmentary as it is, this evidence may be summarized as follows:

1. *Wallace's Study of the Aluminum Industry.* In his monumental work on the aluminum industry,[2] Wallace points out that vertical integration of alumina, power, and reduction stages is imperative in this industry, but that the size of the vertical combination should not approach monopoly proportions.

In the alumina stage, according to Wallace, a scale beyond an output of 15-18,000 tons per year brings no savings in cost of capital equipment per unit of output, and offers very little chance to economize the use of labor. Considerations of plant efficiency at this stage have not required monopoly in the industry since 1909.[3]

In the reduction stage, the Hall process for electrolytic reduction affords no opportunity for the use of large, specialized units of machinery or for extensive specialization of supervision. The process is a simple one, operated with simple equipment, and neither the process nor the equipment has undergone any fundamental change since the industry first began. The quantity of current which can feasibly be used in a single cell determines that the optimum size cell be relatively small. Requirements for electrical energy are unaffected by the scale of the reduction plant, since savings in power consumption and labor have been derived from improvements in electrical apparatus, design, and operation of cells, rather than from larger plants. According to Wallace, maximum effectiveness at the power and reduction stages has not required a monopolistic scale, in spite of the fact that the best structural firm will possess a hydroelectric development which is likely to be quite large and which will have favorable site characteristics and cheap transportation.[4]

With respect to semi-fabrication and the finishing stages of the aluminum industry, Wallace shows that relatively small scale production in castings and utensils is quite economical, and that the most economical scale for a rolling mill need not be too large.[5] Wallace feels that the experience of Alcoa, which has in the past operated a number of rolling mills, indicates that the optimum

[1] While there has been considerable discussion of the relative efficiency of small, medium-sized, and large firms, the findings are—at best—inconclusive. See R. C. Osborn, "Efficiency and Profitability in Relation to Size," *Harvard Bus. Rev.*, Mar. 1951, XXIX, 92.

[2] D. H. Wallace, *Market Control in the Aluminum Industry* (Cambridge: Harvard University Press, 1937).

[3] *Ibid.*, pp. 194-95.

[4] *Ibid.*, pp. 190-91.

[5] *Ibid.*, Ch. 18, 19.

scale is not so large as to offset the advantage of having sheet mills located either at the reduction works or close to markets. He holds that maximum economy does not require monopolization of all fabricating operations by a single firm.

Wallace concludes that, all things considered, there was no economic reason for permitting the existence of a single-firm monopoly in the aluminum industry prior to 1936.[6] If this conclusion is valid—if oligopoly would have been as efficient and feasible in 1936 as monopoly—the tremendous growth in demand since then, coupled with a substantially unchanged state of the arts, should—by present standards—justify the existence of a larger number of firms than today dominate the aluminum industry.

2. *Stocking's Testimony before the Celler Subcommittee on Monopoly Power.* In the course of his appearance before the Committee, Stocking presented some startling and highly significant facts on the efficiency of the nation's largest steel producer. Drawing on an unpublished report by the engineering firm of Ford, Bacon & Davis—a report prepared at the request of U.S. Steel itself—Stocking pictured the Corporation:

> . . . as a big sprawling giant, whose production operations were improperly coordinated; suffering from a lack of a long-run planning agency; relying on an antiquated system of cost accounting; with an inadequate knowledge of the costs or of the relative profitability of the many thousands of items it sold; with production and cost standards generally below those considered everyday practice in other industries; with inadequate knowledge of its domestic markets and no clear appreciation of its opportunities in foreign markets; with less efficient production facilities than its rivals had; slow in introducing new processes and new products.[7]

On the basis of the powerful indictment in this engineering report (as well as other equally devastating evidence), some of our foremost economists concluded that the dissolution of U. S. Steel into at least three separate integrated units would not violate the demands of modern technology. They assured the Committee that "one can be opposed to economic bigness and in favor of technological bigness in most basic industries without inconsistency."[8]

3. *Findings of the President's Materials Policy Commission.* Although the Commission made no investigation of the relationship between size and efficiency *per se*, it did examine the implications of technological change in a number of important fields. Thus, in the case of the steel industry, the Commission believed that future technological developments would be of such nature as to reduce the optimum size of plant and, therefore, the amount of capital investment required for profitable operations. The Commission cited several specific innovations which would tend to render obsolete the more expansive and elaborate processes for steel production now in use. Said the Commission:

[6] *Ibid.*, p. 203.

[7] House Monopoly Subcommittee, *Hearings*, Part 4-A, 81st Congress, 1950, p. 967.

[8] *Ibid.*, p. 996 (testimony of George Stigler).

> A significant consequence of recent advances in technology may conceivably be the emergence of enterprises conducting integrated operations on a much smaller scale. The utilization of local deposits of ore in the direct reduction of iron or in the production of pig iron in the electric furnace or in the low-shaft furnace, the utilization of local supplies of iron and local surpluses of scrap in the production of steel in the electric furnace or in the turbo-hearth, the continuous casting of semi-finished steel, and the finishing of steel in small mills—all of these operations are feasible. All of them can be undertaken with an investment much smaller than that required for production on a larger scale.[9]

The Commission concluded, therefore, that the new developments in technology "may well provide the basis for a number of new establishments, turning out special products for local markets, each of them conducting continuously integrated operations on a small scale, and all of them contributing significantly to the supply of steel."[10] Such developments, if they do take place, would serve to demonstrate once again that the growth of the giant firm does not necessarily represent an inescapable, inevitable, and inexorable technological trend.

4. *Experience under the Public Utility Holding Company Act of 1935.* The evidence indicates that the dissolution proceedings under this Act did not preclude the optimum utilization of existing technology nor precipitate the fatal loss of efficiency which had been widely predicted prior to the law's passage. While the statistics are by no means conclusive, they do show that—in most cases—efficiency after dissolution was *increased,* and that this increase was reflected in the security values of those operating companies which were divorced from their parent organizations.[11] That investors have benefited—primarily as a result of various dissolution proceedings—is perhaps most graphically demonstrated in the table at the top of the next page. That consumers have simultaneously benefited from a decrease in utility rates (which occurred despite constantly rising operating costs) is eloquent testimony to the wisdom and success of the dissolution program in the utility field. Here certainly is one industry where a substantial amount of deconcentration has not produced the decline in operating efficiency which management spokesmen had expected and feared.

In citing the foregoing fragmentary studies I do not mean to suggest that they provide a definitive answer to the problem of technology, size and efficiency, or a clear guide to public policy. As far as public policy is concerned, I would agree with Levitt that no firm should be punished for size or success achieved on the basis of efficiency and performance in the public interest.[12]

[9] The President's Materials Policy Commission, *Resources for Freedom—The Outlook for Cheap Commodities,* Vol. II, June 1952, p. 17.

[10] *Ibid.,* p. 17.

[11] Report of the S.E.C. to the Senate Small Business Committee, *The Public Utility Holding Company Act of 1935,* 82nd Congress, 1952.

[12] Both Levitt and I are aware, of course, (1) that Brobdingnagian size is not always a passive adjustment to the technological and economic dictates of the market place; (2) that corporate executives, who proclaim "we are big because we are efficient; we are big

TABLE I.—PERCENTAGE INCREASE IN MARKET VALUE OF COMMON STOCK OF CERTAIN PUBLIC UTILITY HOLDING COMPANIES BETWEEN DATE OF REGISTRATION UNDER THE PUBLIC UTILITY HOLDING COMPANY ACT OF 1935 AND SEPTEMBER 34, 1951[a]

Name of Holding Company	Percent of Increase from Registration Date to September 24, 1951		
	Market Values of Common Stocks[b]	Dow Jones Utilities Averages[c]	Dow Jones Composite Averages (rails, utilities, industrials)
1. American Power & Light Co.	376.3	158.1	181.9
2. Columbia Gas System, Inc.	87.2	108.0	124.8
3. Commonwealth & Southern Corp.	435.0	180.5	192.3
4. Electric Bond & Share Co.	448.5	166.3	191.5
5. Electric Power & Light Corp.	451.3	167.7	193.1
6. Engineers Public Service Co.	997.2	128.8	134.0
7. Middle West Corp.	419.5	42.0	80.1
8. National Power & Light Co.	187.3	158.1	181.9
9. Niagara Hudson Power Corp.	233.8	180.5	192.3
10. North American Co.	32.2	32.7	47.9
11. United Corp.	188.0	180.5	192.3
12. United Gas Improvement Co.	73.0	194.8	208.2

[a] Source: S.E.C. Report, *op. cit.*, p. 21.

[b] The figures in these columns include the capital distributions of cash and portfolio or holding-company securities, taken at closing prices as at September 24, 1951, made to the holders of the common stocks of the holding companies listed herein.

[c] The figures for percentage increase in the Dow Jones averages (in this and the next column) are different for the different holding companies because the companies listed here registered under the Act on different dates. No intercompany comparisons should, therefore, be made.

I would agree with Levitt that the goals of competition—the encouragement of efficiency, initiative, dynamism and enterprise—should be given a prominent place in our policy formulations. I have, therefore, drafted and advocated legislation which would permit a "monopolistic" firm to escape dissolution, divorcement and divestiture, if such firm can demonstrate that its size is necessary for the attainment of efficiency or that its business performance in the past has materially benefited the general public.[13] Such a modification of

because consumers want us to be big," are not always accurately describing the causes for their firm's industrial growth; (3) that giantism, far from being a matter of manifest destiny, is frequently attained or perpetuated by unfair, predatory and discriminatory trade practices; the abuse of the patent and trade-mark laws; the use of coercive integration and price-squeezing tactics against non-integrated competitors; the proclivity of government procurement officers to award contracts to a favored few; etc. In short, both Levitt and I recognize that superior efficiency is but one of many factors which explain the preeminence of particular industrial giants in the competitive arena, and that a pluralistic view of economic development processes is probably more accurate than an interpretation based on technological determinism.

[13] For the text of my proposal and the accompanying testimony, see House Monopoly Subcommittee, *Hearings*, Part 2-B, 81st Congress, 1949, pp. 1311-39, 1600-25. For a more

the antitrust laws would, I believe, contribute substantially to a resolution of the dilemma raised in Levitt's comment.

However, while the incorporation of an efficiency standard into the antitrust laws can be justified on economic grounds, I do not believe that a more drastic revision of these laws is either necessary or desirable. Evidence to date certainly does not indicate the existence of an irreconcilable conflict between modern technological exigencies and a policy of enlightened and selective trust-busting. Neither does our experience with cartels, co-determination, public utility regulation (especially by the I.C.C. and C.A.B.),[14] and the experiments with government ownership tend to demonstrate that these public control mechanisms are happy alternatives to a regime of competition. Doubtless, the antitrust laws are not perfect either in conception or enforcement. Doubtless, there is the danger that they may—under certain conditions—destroy the very things they seek to promote. This does not mean, however, that the antitrust laws are not worth the calculated risk we are taking. It does not mean that their replacement by alternative public policies, which have not proved too successful in the past, would be conducive to a greater protection of private rights or a more auspicious enhancement of the public good.

WALTER ADAMS*

detailed discussion of the standards to be used for measuring business performance in the public interest, see Edward S. Mason, "The Current Status of the Monopoly Problem in the United States," *Harvard Law Rev.*, June 1949, LXII, 1265-85.

[14] See S. P. Huntington, "The Marasmus of the I.C.C.: The Commission, the Railroads, and the Public Interest," *Yale Law Jour.*, April 1952, LXI, 467-509; Senate Small Business Committee, Report on *Role of Irregular Airlines in United States Air Transportation Industry*, 82nd Congress, 1st Session 1951.

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The Dilemma of Antitrust Aims: Further Comment

In the December, 1951, issue of the *American Economic Review*, Professor Walter Adams[1] expresses disappointment over the economic results of the government's antitrust suit against the Aluminum Company of America. Most economists would agree that, in spite of two court decisions which are by and large favorable to the government's charges of monopoly against Alcoa, the industry today is not one which is characterized by effective competition. Adams indicates that the structure and the performance of the industry might have been improved substantially had the courts not taken "the easy way out." Both courts, in denying the government's request for dissolution of Alcoa, "refused to undertake the kind of physical reorganization of the industry to bring about a competitive structure consistent with the objectives of the Sherman Act."[2] Judge Hand is criticized for evading the issue of dissolution in the hope that effective competition would be engendered through the disposal of surplus government aluminum plants by the War Assets Adminis-

[1] "The Aluminum Case: Legal Victory—Economic Defeat," XLI, 915-22.

[2] *Ibid.*, p. 922.

tration. And the decision of Judge Knox is held to be disturbing for several reasons:[3]

1. The inadequate relief granted and the dim prospects for further relief as a result of the Court's failure to order the dissolution of Alcoa.
2. The establishment of a precedent which affects adversely the likelihood of success in the prosecution of future antitrust cases involving a "Big Three" or "Big Four."
3. The Court's naive belief that the separation of Alcoa and its Canadian affiliate would introduce a fourth competitor into the domestic market.
4. The discouraging effect of the decision on the expansion of capacity by the three domestic producers.

In a final paragraph, Adams says "The result is that aluminum today is a three-producer industry; that Alcoa, instead of being a single-firm monopoly, now exercises residual monopoly power through price leadership and other means; that the concerted action typical of oligopoly has replaced the unilateral action characteristic of monopoly. A ringing judicial denunciation of monopoly has produced little in the way of affirmative relief. Vigorous and effective competition has not been re-established in this basic and vital industry."[4]

It is with the first two of the objections to the Knox decision and, by implication, the concluding statement herein quoted that this note will be concerned. It will be argued (1) that Judge Knox properly denied the government's request for the dissolution of Alcoa, and this for two reasons: (a) the government had not demonstrated to the Court that physical dismemberment of Alcoa's properties was a practicable possibility; and (b) it was not shown, and there is little reason to believe, that the performance of a four-firm domestic aluminum industry would be superior to that which now exists with Alcoa, Reynolds and Kaiser the only producers. It will also be urged (2) that the case should not be regarded as one which represents judicial approval of an industry composed of only three firms, since in this instance the government's case was centered on Alcoa and was not directed against the industry as an entirety. Though I share Adams' disappointment that significant steps were not taken to make the industry more competitive, I cannot join as readily in the belief that Judge Knox erred in his refusal to dissolve Alcoa, nor can I share his concern for the precedent which is set for future antitrust cases against industry characterized by a "Big Three" or "Big Four."

1 (a). While it is true that the decision of Judge Knox contains serious errors of economic analysis, and some of the reasons for denying dissolution are economically invalid, it would seem that the Court properly recognized the physical impediments to the successful accomplishment of dissolution. The government had urged that Alcoa be broken up into two successor companies each fully integrated and with a more or less complete line of fabricated and semi-fabricated products. It seems to have assumed, therefore, for it was not

[3] *Ibid.*, pp. 920-22.

[4] *Ibid.*, p. 922.

demonstrated, that the industry is marked by extensive economies of scale and vertical integration, so that a large number of firms is not a practicable alternative.[5] Neither was it shown that Alcoa could be split in two so that whatever the efficiencies of scale and vertical integration, they might be preserved in the separate successor firms. It is doubted that the government could successfully have done so. For it must be remembered that Alcoa was not formed as the result of combination of previously competing companies and that, therefore, there is not a large amount of duplication of operations at each of its several sites. An examination of the nature and location of its various productive facilities reveals an unequal concentration of Alcoa's various operations, sometimes confined to a single plant, which would make difficult the creation of another fully integrated producer from the facilities which then existed. Judge Knox mentioned specifically one lone instance,[6] albeit a most important one. Of Alcoa's two alumina plants, only the one at Mobile was an efficient producer. The East St. Louis facility would be competitive only so long as it utilized high-grade domestic bauxite. Dwindling reserves made it doubtful that this plant would be much longer useful, and Alcoa had in fact indicated a desire to abandon the plant in favor of a new one to be located in the Pacific Northwest. It may well be that engineering studies would reveal the possibility of separation of the Mobile plant for operation by two companies, but such evidence was not presented to the Court for consideration.

The reduction plants could have been divided nicely between two successor companies as far as regards capacity. The plants at Alcoa, Tennessee, and Badin, North Carolina, would together be of approximately the combined size of the plants at Vancouver, Washington, and Massena, New York, including

[5] The government seems not to have been influenced in this respect by the presence of Reynolds and Kaiser. Although it did not outline any specific plan of dissolution, it seems from the beginning to have accepted a completely integrated pattern for the industry, and at no time did it contemplate replacing Alcoa by more than three firms. In its argument before Judge Hand it offered no plan at all and simply requested the Court to require the Aluminum Company to present, within ninety days of the conclusion of World War II, a plan to dissolve itself. But it accepted the apparent efficiencies of vertical integration in saying that "there is . . . every likelihood that upon a dissolution many of the advantages of integration can be retained. It is quite possible for Alcoa to be separated into several integrated companies" (148 F. 2nd 416, *U.S. v. Aluminum Company of America et al.*, "Brief for the United States," p. 352). And later Attorney General Clark referred to "clusters of plants, each representing some local integration, as at Alcoa, Tenn., Massena, N.Y., and New Kensington, Pa. Each of the clusters can remain intact and the individual plants [those not associated with the above "clusters"] distributed among them so that the finally assembled groups will represent a balanced and efficient subdivision of Alcoa's present properties." (*The Aluminum Industry*. Report of the Attorney General to the Congress. 79th Congs., 1st Sess. Senate Doc. 94. Washington, 1945.) Although this would have been quite impossible of achievement, it is clear that the Justice Department saw the cleavages of dissolution to be vertical rather than horizontal or a combination of the two. Apparently the Antitrust Division never contemplated a pattern of dissolution which would have separated the various stages of production, although it would seem to merit some attention, particularly a scheme which would separate production of ingots from fabrication into intermediate and end products.

[6] *U. S. v. Aluminum Company of America et al.*, 91 F. Supp. 333, 416-17.

the plant at the latter site purchased by Alcoa from the government.[7] But the economics of location for the industry were not presented as evidence, and it would be difficult to support such a division of facilities in the absence of such analysis.

It is at the fabricating stage that there is extremely high concentration of operations at Alcoa's various facilities. For example, most of Alcoa's sheet and plate is rolled at Alcoa, Tennessee, where, it should be noted, is also located its largest reduction plant. All of the Company's rod and bar facilities, as well as those for fabricating structural shapes, wire, and cable, are located at Massena, where again there are extensive reduction facilities. In extrusions, the plant at Lafayette, Indiana, has capacity in excess of the combined capacities of four other widely separated plants, and in tubing more than the combined capacities of two others. Facilities for forging are located in Cleveland, except for some small capacity at Los Angeles for meeting the requirements of the West Coast market.

Thus it becomes clear that, if each of the successor companies is to be a fully integrated concern producing a full line of fabricated products, the dismemberment of Alcoa would require at least considerable reshuffling of machinery and equipment to make possible the preservation of an efficient balance, with respect to both the scale of investment and the flow of materials, between the separate stages of production. Again, investigation may reveal that such reorganization is technically and economically feasible, and that the considerations herein mentioned do not constitute serious impediments to effective dissolution. In the absence of evidence to the point, however, it must be held that Judge Knox properly denied the government's plea in this direction if it be assumed that the aluminum industry is characterized by marked efficiencies of scale and vertical integration. But even this would not have been enough to justify dissolution. It should be recognized that mere physical separation of facilities may mean one less obstacle to the redistribution of ownership and control, but it does not therefore make it practicable. Additional considerations such as the concentration of managerial and technical skills, research and development personnel and equipment, sales organization, and so forth, would have to be examined before it could be determined whether the program advocated by the government could be made an effective solution to the problem of monopoly in this industry.

1 (b). In addition to his recognition of the physical impediments to effective dissolution, it would seem that Judge Knox was correct also in questioning the possible benefits to be derived from the breaking up of Alcoa into two suc-

[7] The reduction facility at Niagara Falls had been abandoned permanently by Alcoa in February of 1949, in the face of a strong demand which ran ahead of total supply. The fact that a plant could be abandoned at such a time may be taken as evidence of Alcoa's monopolistic control of the market for aluminum ingots. The action stems, of course, from Alcoa's control over price and its decision to maintain a price lower than that justified by demand conditions. Presumably in a freely competitive market, price would rise to the point where either it covered the variable costs of the high-cost plant or the amount demanded had been reduced to a point where it could be met by existing supply not including the contribution of the high-cost plant.

cessor corporations. He saw "little guarantee that the creation of one new aluminum company, in the presence of a still strong Alcoa, would materially change the competitive situation that now exists. The potential benefits which may thus derive from the government's plans hardly justify the risk that the new producer created thereunder would soon wither and die."[8] The government did not in any systematic manner try to show that the economic results of a four-firm industry would be superior to that of one composed of only three firms. It can with justice be held that since the recasting of a market structure through the dismemberment of a giant industrial enterprise is a drastic measure with far-reaching consequences, the government should be required to demonstrate to the courts, as it did not do in this case, that its program for remedial action is practicable and that the performance of the industry is likely thereby to be improved. There should be some showing, in other words, that the proposed remedy is capable of achieving its purpose.[9] It is recognized that these requirements are not easily met, but in view of the seriousness of the measures to be taken, it cannot be held that they are excessive. A court of law cannot be expected to embrace such a program until there be at least a strong likelihood that it will bring the desired relief. Equally, it is necessary to insure that the results of remedy will not include the introduction of additional evils greater than those that it was designed to cure.

Furthermore, it is difficult to believe the government could show successfully that a four-firm industry is to be preferred to one in which only three firms account for total output. Although speculation as to the probable characteristics and performance of a reconstructed industry is hazardous at best, economic theory would appear to refute the hopes that dissolution at any time during the proceedings in the present case would have led to competition of the kind anticipated by the government. From the beginning, before the entry of Reynolds and Kaiser to the industry, the question of central importance concerned the desirability of a highly concentrated obligopoly as compared to single-firm monopoly. Were dissolution to have been ordered, the economic characteristics of the reorganized industry would conform very closely to the classical textbook case of close-knit oligopoly:

(1) It was recognized that for technological reasons the size of the firm would be large relative to the extent of the market. Presumably most, if not all of the efficiencies of large-scale operations would have been realized in spite of the break-up into smaller units. The industry would be one marked by a very few firms, four at the most.

(2) There would be little or no probability of the entry of new firms, due primarily to the unique power requirements of the industry.

[8] 91 F. Supp. 333, 418.

[9] This appears to have been in part the position of Justice Burton in the *National Lead* decision. In refusing to order divestiture, he declared, "To separate the operating units of going concerns without more supporting evidence than has been presented here to establish either the need for, or the feasibility of, such separation would amount to an abuse of discretion." (*United States v. National Lead Company et al.*, 332 U. S. 319, 352). It must be remembered, however, that in this case the Court found "vigorous and effective" competition between National Lead and DuPont in the market for titanium pigments.

(3) The firms would be selling undifferentiated products, the demand for which had been expanding and would probably continue to grow for some time to come.

(4) Overhead costs are of unusual importance, especially if the firms should continue to generate their own electric power.

(5) The reduction of alumina to ingot is a continuous around-the-clock operation, and to interrupt production is apt to be an expensive operation involving the re-lining of the pots, the possible loss of skilled workers, and temporary inferiority of metal upon resuming activity.

(6) The demand for aluminum is subject to rather wide cyclical variations.

Given these conditions, the presumptions of economic theory lead to the conclusion that, with respect to price and output decisions, the market performance of the reconstituted industry would not differ greatly from that of a single-firm monopoly. Since the products of the primary producers are largely homogeneous and their customers are for the most part industrial buyers who purchase to specification, rivalry will be very narrow and will tend to center on price rather than on product differentiation and sales promotion. In addition, the high degree of concentration, growing demand, and the unlikelihood of new entry are likely to assure that the price would not be far different from that which would obtain under single-firm monopoly. Further, the strong pressures of overhead cost, plus the expense of closing down operations for short periods, make even more likely an inflexible price structure, probably marked by a pattern of price leadership, in the absence of formal agreement, for those changes which do occur.[10] It would appear that the present pattern of concerted oligopolistic action is the result of the technological and economic characteristics of the industry, and that dissolution of Alcoa as urged by the government would do little or nothing to alter the situation materially.

It is likely, though by no means certain, that a closely knit oligopoly of the kind herein portrayed would be preferable to single firm monopoly with respect to the rate of investment, increased activity by non-integrated producers in the fields of fabricated and semi-fabricated products, the introduction of new products and uses for aluminum, and the alleged failure of potential users of aluminum to adopt it for fear of becoming subservient to Alcoa. But there is no reason to believe that in these respects the performance of a four-firm industry would be superior to that of a three-firm industry. There could only be the hope that the presence of an additional producer would make more likely the possibility that one member of the industry would fail to recognize the advantages of "parallel action." The courts cannot be expected to dismember a going concern on the basis of tenuous possibilities.

2. Finally, it is not easy to see why the Knox decision should be regarded as making more difficult the prosecution of future antitrust cases involving a "Big Three" or "Big Four,"[11] nor is it clear that the decision "held invalid

[10] One writer gives these two factors as the primary ones making cartelization of the international aluminum industry advantageous, from the point of view of the producers. Louis Marlio, *The Aluminum Cartel* (Washington, 1947), pp. 114-15.

[11] Adams, *op. cit.*, p. 920.

some of the more basic elements of the 'parallel action' theory which is essential in proving an oligopoly case."[12] For it should be recognized that the government's case before Judge Knox was directed against the Aluminum Company and not against the industry as a whole.[13] The issue which was presented to the Court was simply that of deciding whether the dissolution of Alcoa would contribute substantially to a more competitive industrial structure for aluminum. Although it is true that any implications of the decision that the industry is now effectively competitive are clearly erroneous, it must, I believe, be granted that the relief requested by the government would not materially have improved the situation. Because the government's attack was narrowly concentrated on one firm in the industry, the resulting decision should not be taken as one which sanctions the prevailing structural organization of the industry.[14] And even if it were so regarded, it would appear that, had the requested relief been granted, an industry characterized by a "Big Four" had the blessing not only of the courts, but also of the Antitrust Division. To those who share Adams' philosophy, this should be more disheartening than the case as it now stands.

In summary, the antitrust case against the Aluminum Company began as the test was of a new theory of illegal monopoly, and of dissolution as a remedy where the existence of such monopoly could be shown. In its former aspect it was highly successful, for the decision of Judge Hand ~~is~~ regarded as one of the most significant in antitrust history. However, the case cannot be regarded as a satisfactory one from the standpoint of the development of public policy toward dissolution as a remedy for unlawful monopoly. For one thing, success in this direction was made difficult by wartime and postwar developments, not foreseen when the case was brought to trial in 1937, which radically altered the structure of the industry before Judge Hand's decision in 1945 and again by the time of Judge Knox's decision in 1950. For another, it is open to question whether dissolution along the lines suggested by the government would have been appropriate to this industry in the absence of such developments. Workable competition would seem not to be practicable for this industry so long as it is assumed that there are significant economies of scale and integration. If such economies are not present, then the government's proposal for the reconstruction of the industry would seem to be excessively mild. But so long as it is held that there cannot be more than a few firms in the domestic aluminum industry, I should hesitate to regard this case as an instance of economic defeat. I should prefer to view it instead simply as one which proved unsatisfactory as a test of dissolution as the remedy for monopoly.

William H. Martin*

[12] *Ibid.*, p. 921.

[13] In view of the historical development of the case it is difficult to see that it could have been otherwise.

[14] Adams, *op. cit.*, p. 920.

* The author, assistant professor of economics at the State University of Iowa, expresses indebtedness to his former colleagues at Williams College, Kermit Gordon and Frank Child, for comments helpful to the preparation of this note.

Reply

I must agree with many of the points in Mr. Martin's excellent comment. It is true that the "shyness" of the courts in approving dissolution, divorcement and divestiture decrees can be attributed not only to the temperament of many judges and to their lack of training in the economics of monopoly, but also to the inadequate relief programs prepared by the Antitrust Division. It is probably true, as Mr. Martin points out, that the Division failed to establish a strong case for dissolution in the aluminum industry. This does not mean, however, that—given a comprehensive and carefully drawn relief proposal—the dissolution of Alcoa would have proved impractical, unfeasible or unworkable.

As I have argued elsewhere,[1] the ineffective relief work done by the Antitrust Division in the aluminum and other major dissolution cases can probably be explained as follows: Since relief is granted only after the government has proved a Section 2 violation, the Antitrust Division presents evidence primarily to substantiate its monopoly charges, and neglects to consider the specifics of relief until after the conclusion of the trial and the announcement of the court's opinion. It thus de-emphasizes the importance of a well organized and comprehensive relief program, and permits the legal problem of "winning" the case to take precedence over the economic problem of obtaining adequate remedial action. The result is that relief measures are often hastily improvised, and that the trial attorneys "estimate" how much by way of relief they can wrest from the courts rather than demanding the kind of relief required to effectuate the purposes of the law. It is such considerations as these which may explain why, in the aluminum case, the government did not request vertical as well as horizontal disintegration of Alcoa; why Judge Knox was asked to approve creation of only one instead of several new firms in the industry; and why such relief proposals as were advanced were based on inadequate study and documentation.[2]

Granted, then, that the government as well as the courts are to blame for the unhappy results of the aluminum case; granted that the relief demanded was probably excessively mild and inadequately documented—is Mr. Martin correct in his contention that a four-firm aluminum industry is hardly preferable to a three-firm industry? I do not think so. As Henry Ford I and

[1] "Dissolution, Divorcement, Divestiture," *Indiana Law Journal,* Fall 1951, pp. 31-37.

[2] More effective relief might be obtained if dissolution requests by the Antitrust Division were based on thoroughgoing studies of relief alternatives. Such studies should be made by an adequate staff of economists, industry specialists, and *engineers* (within the Antitrust Division) who possess the technical qualifications for the development of a practical and economically effective relief program. Increasing use might also be made of Section 6 of the Federal Trade Commission Act which authorizes the Commission "upon application of the Attorney General to investigate and make recommendations for the readjustment of the business of any corporation alleged to be violating the antitrust Acts in order that the corporation may thereafter maintain its organization, management, and conduct of business in accordance with law." Finally, the judges might be provided with the assistance of technical and economic experts to appraise the relative merits of opposing relief proposals for the reestablishment of effective competition in an industry.

Harvey Firestone, Sr., have demonstrated, one maverick is enough to upset the effectiveness of oligopolistic collusion and exploitative parallel action in a highly concentrated industry. A priori, and without considering many relevant institutional factors, it would appear that there is a greater chance of finding such a maverick in an industry composed of four rather than three firms, in a five-firm industry rather than a four-firm industry, etc. Four firms are more difficult to align in a collusive arrangement than three, five more difficult than four, etc. (a fact which every academician who has had experience with committee meetings will readily recognize).

Moreover, the theory of games would seem to indicate that the permutations and combinations of possible coalitions in an oligopolized industry increase rapidly as the number of firms increases. Thus, let the number of combinations of *n* things taken *r* at a time be ${}_nC_r = \frac{N!}{r!(n-r)!}$, the number of conceivable coalitions in a three-person game is 3 (since ${}_3C_2 = \frac{3.2}{2(1)} = 3$); while the number of conceivable coalitions in a four-person game is 10 (since ${}_4C_2 = \frac{4.3.2}{2(2)} = 6$; ${}_4C_3 = \frac{4.3.2}{3.2(1)} = 4$); and in a five-person game 25 (since ${}_5C_2 + {}_5C_3 + {}_5C_4 = 25$), etc. So we see that the rate at which coalitions possibly develop increases rapidly as the number of participating "players" goes up. The uncertainties and difficulties confronting any promoter of collusive behavior are, therefore, enhanced.

In conclusion, it should be emphasized once again that the process of unscrambling industrial omelets is not easy; that it is difficult to find desirable, practical and feasible means of breaking asunder what man has illegally joined together. This does not mean, however, that the job cannot or should not be done—especially if we content ourselves with industrial structures which, while far from Utopian perfection, are nevertheless superior to those which they are designed to replace. Unfortunately, our choice is not between good and evil, but between better and worse. There are no ready panaceas for the complex problems of democratic capitalism.[8]

WALTER ADAMS

[8] I am indebted to my colleague, Victor E. Smith, for his comments and suggestions.

BOOK REVIEWS

Economic Theory; General Economics

Theories of Surplus Value. By Karl Marx. A selection translated from the German by G. A. Bonner and Emile Burns. (London: Lawrence and Wishart. 1951. Pp. 432. 25*s*. New York: Internat. Publishers. 1952. $4.00.)

A History of Economic Theories: from the Physiocrats to Adam Smith. By Karl Marx. Edited with a Preface by Karl Kautsky. Translated from the French with an Introduction and Notes by Terence McCarthy. (New York: The Langland Press. 1952. Pp. xix, 337. $5.00.)

What Marx had referred to in his Preface to the first edition of Volume I of *Das Kapital* as the "last volume (Book IV), the history of the theory" was left on his death as little more than preliminary and (according to Kautsky) "almost indecipherable" drafts and rough notes in a mixture of German, French and English (often quotations, "amounting to almost a half," with comments added in note-form). Engels was unable, however, to complete this part of the manuscript for publication before his own death, although it was written (according to Engels in his Preface to the second volume) some years earlier (in the '60's) than the manuscript which was to appear as Volume 3 in 1894, the year before Engels's death. The task of editing it fell to Karl Kautsky, who published it in three books or volumes between 1905 and 1910 under the title of *Theorien über den Mehrwert.* In the form in which it was put together by Kautsky, it was not presented as a continuation of the first three volumes of *Das Kapital* (for reasons which Kautsky gives in his Preface), but as "a companion work to the first three volumes, to which it bears the same relation as Part I of the *Zur Kritik der politischen Ökonomie* to the first section of the first volume of *Das Kapital.*"

Since the 1920's the manuscript material from which Kautsky produced his edition has been in the possession of the Marx-Engels-Lenin Institute in Moscow, where for a number of years work has been in progress upon a new and refashioned edition. This work now seems to be bearing fruit, and the first volume of such a new edition (in Russian) is on the point of appearing (and may even have appeared by the time that this review goes to press). According to a preliminary account of it by its editors in a Soviet journal two years ago (*Voprosi Ekonomiki,* 1950, No. 9), this new version apparently follows a logical rather than a chronological pattern of exposition and criticism, thereby reverting, it is claimed, to the sequence of the original manuscript which Kautsky is accused of distorting.

It is a remarkable fact that hitherto an English translation of this classic of economic literature has been lacking; although there has been for some time (since 1924-25) a none-too-satisfactory French translation (as well as translations into Russian, Japanese and Georgian, and a partial Italian translation). Now, with sudden *embarras de richesse,* we are presented simultaneously with two English translations of part of the work.

In the first of these the editors have sacrificed completeness for the sake of giving us within one cover those parts of the work that are of greatest interest for the light they throw both on Marx's theory as expounded in the other three volumes of *Kapital* and on his relations with his predecessors of the Classical School, in particular Adam Smith and Ricardo. They have modestly called their volume "Selections"; but a comparison with the McCarthy edition, which has aimed at a complete rendering of the first part of the work, shows how little of importance Messrs. Burns and Bonner have lost by their selection. These selections extend over the first two Kautsky books (or volumes), from Petty to Ricardo. The first hundred pages consist of Marx's commentary on early English writers and on the Physiocrats (including the longish Appendix on the *Tableau Économique*). The second hundred pages are on Adam Smith; with the second half of the book covering Ricardo, including the important section on "Accumulation of Capital and Crises" (a large part of which is a critique of Ricardo's acceptance of Say's Law).

What is omitted from the first part consists merely of a few notes on comparatively little-known Physiocratic writers. While these notes include some paragraphs about Adam Smith's relation to the Physiocrats, the latter consist chiefly of quotations, including quotations from Smith's French translator, Garnier; and little is lost by their exclusion. From the second part there are omitted: (a) a few pages which refer *en passant* to Say, Storch and Ramsay (of which perhaps the only one to be regretted is Ramsay), (b) a longer and rather prolix section (relegated by Kautsky to an Appendix of 73 pages) on "An Enquiry into the Problem of Reducing Total Capital to Wages and Profits," and (c) some extensive and diffuse notes on "Views on Productive Labour before and after Smith" from Hobbes to Thomas Chalmers. From the Ricardo section the main omission is the part (covering 232 pages in the German edition) on Ricardo's theory of rent. Despite the loss here of some historical comments on the theory of rent (on Anderson, Smith, Malthus, Roscher, Rodbertus) and of Marx's difficult concept of "absolute rent," this omission seems to the reviewer to be justified by the fact that so large a proportion of this part is loaded with arithmetical examples—an indication that it was still very much at the raw material stage and very far from being even a draft for the final work. The only other omission is some *Miszellanea* of five pages about Gross and Net Income and about the views of Ricardo and Barton on Machinery. Yet at the cost of these omissions we have the great advantage of possessing in one volume two-thirds of the whole work. (The third which remains covers the post-Ricardians from McCulloch to Richard Jones and Proudhon, under the general title of "From Ricardo to *Vulgärökonomie*)."

So far as the reviewer is competent to judge, the translation by Messrs. Bonner and Burns is competent and judicious. It is eminently readable, which cannot always be said of translations from the German; being rendered into simple and direct English, which at the same time retains, where necessary, the graceful idiom of early 19th century economic language. The book is well printed; and as a whole it represents a worthy addition to economic litera-

ture, for which both translators and publishers have earned the gratitude alike of students of Marx and of students of the history of economic thought.

Unfortunately as much cannot be said of the rival volume. Mr. Terence McCarthy deserves commendation for his enterprise, and his edition can claim the advantage of completeness within the range that it covers (including the translation of Kautsky's own Preface to the *Theorien*). But it covers no more than a third of the whole, and while this embraces Adam Smith it excludes Ricardo. Although the introduction refers parenthetically to "Volume II of this work . . . when it comes off the press some months from now," there is nothing on either title-page or binding to indicate that it is the first part of a larger whole. This is, however, no more than a minor restriction beside the surprising fact that Mr. McCarthy has chosen to make his translation from the *French* edition. This seems to be excused by no better reason than the accident that the translator happened to be "more at home in the French than in the German." The result is that the widely acknowledged defects of the French translation are carried over into the present edition, and to these Mr. McCarthy has added some of his own. True, he tells us that his translation has been "submitted to competent German scholars . . . to check it for fidelity and completeness," and that "the many gaps which occur in the French edition . . . have been restored." But these helpers are not even named (nor are the restored gaps indicated); and the reviewer has been unsuccessful in finding evidence that their contribution has been at all considerable. One detail is that italics in the original which the French edition commonly ignored are not here restored. The translator admits having taken certain minor liberties with the text, such as dividing paragraphs and sentences and retitling some sections. From an experienced editor, with a knowledge of the original, on whose judgment the reader can rely, such changes are no doubt excusable. But even a superficial comparison of the two translations before us shows us that the second is apt to be clumsy and to lose shades of meaning (minor examples are the rendering in places of *Begriff* as "Theory," and the substitution of "price of labour" for the common classical idiom "price of wages"), where the other is characterized by ease of expression and a more discriminating choice of words.

Not content with allowing Marx to speak for himself, Mr. McCarthy contributes a rather wordy Introduction which ranges from an exposition (which is not without interest) of Marx's views on productive labor to some rather jejune comments on Keynes. Yet it omits to tell the reader the significance of square brackets in the text, to discover which he has to read through Kautsky's Preface. The publishers (who for some reason apply the epithet "legendary" to this work of Marx) inform us that the book is "set in Mergenthaler Linotype Baskerville"; which goes to show that a good type-face is not everything in good typography (in fact, footnotes are printed in another and quite incongruous type-face).

Had this translation not been so unfortunate as to appear at the same time as the other, it would no doubt have been treated more tolerantly, and even welcomed, as a *pis aller*. But, as the position stands, one cannot help submitting it to a comparison, which, but for its claim to be the first *complete*

translation of the first third of Marx's *Theorien,* is inevitably to its disadvantage.

Of Marx's work itself there is probably little that a reviewer need say. Its origin, of which something has already been said, indicates the place which it was intended to have in his work as a whole and the incomplete state in which it was left at his death. Perhaps one need scarcely explain that a reader who comes to this work for the first time cannot expect to find in it any completely new doctrine expounded nor even any quite new exposition of doctrines already found elsewhere in Marx's writings. What he will find is those doctrines approached from a new angle and set in the context of economic thought and discussion of the late 18th and early 19th centuries; as he will also find its pages, on special points, rich in minor elaborations and fresh nuances of meaning. For many, especially for those with some acquaintance with the classical school, I think that this may prove a much more illuminating approach than the more abstract presentation with which Volume I of *Kapital* opens. Certainly a number of misinterpretations which have been current from time to time will be removed by a study of this work: in particular the view that Marx's theory of "prices of production" in Volume III was an afterthought, inconsistently imposed upon the theory of value of Volume I; since it will be seen that his discussion of Ricardo's theory of profit (written, be it noted, in the early '60's) largely turns on how to explain the deviations of prices from values (when capitals are different in composition), and hence to answer Ricardo's special problem of the effects on prices of a rise of wages. Here there can be no doubt that Marx's posing of this question was a direct continuation of what had puzzled and preoccupied Ricardo ever since, when writing the first edition of his *Principles,* he had come upon "the curious effect which the rise of wages produces on the prices of those commodities which are chiefly obtained by the aid of machinery and fixed capital." Finally, and of most interest for those concerned with the development of ideas, it should serve, more completely than anything else, to establish the precise nature of Marx's relationship to the Classical School—a relationship too often obscured by facile references to his cursory "misunderstandings of Ricardo."

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The Law of Freedom as the Remedy for War and Poverty. By EMIL KORNER. Introduction by Alfred Amonn. Translated from the German by H. Leigh Farwell. (London: Williams & Norgate, Ltd. 1951. Distributed in the United States by the British Book Centre, New York. 2 vols. Pp. xxiii, 562 and 668. $9.50.)

This book deals with several fundamental economic issues which are frequently neglected in the workaday routine of academic teaching, research, and governmental policies. Dr. Korner's presentation of these issues is neither guided nor hampered by the predominant schools of economic thought. In the first volume, he discusses problems of industrial organization, and atten-

tion is focused on the relationship between individual freedom and governmental intervention, and on the cooperation of entrepreneurs and workers. The theories and policies of full employment are scrutinized in detail, and practical proposals are made for eliminating unemployment. The second volume offers an examination of economic value and price formation. The motivating forces of the market mechanism and of monetary relations are brought into prominence. Korner displays enough initiative and independence to arrive at interesting results.

His economic thinking has obviously developed under the influence of three factors. First, he obtained, in the decade before the First World War, a good training in business administration and economic theory of the then prevailing Viennese pattern. He absorbed the individualistic doctrines of *laissez faire* and was imbued with a breadth of interest that led to extensive reading far beyond the scope of economics in the strict sense. Second, he came to realize during the two interwar decades, when he held a position in Czechoslovakian heavy industry, that a certain degree of governmental coordination is inevitable. Third, he became a bitter enemy of excessive governmental economic planning, based on aggressive nationalism, when the Hitler regime forced him to leave Central Europe. He settled in England and became a British subject.

The positive doctrines determined by these three phases of intellectual development embrace economics as well as other branches of social science. The ethical and sociological postulates of the author culminate in a staunch defense of individual freedom. He stresses that social welfare can be derived only from individual welfare and free individual action. This freedom should be understood in the sense of Adam Smith; it should not deteriorate into unrestricted license or anarchy; and it should be sheltered by state protection. The guiding principle of any "positive theory of laissez faire" should be a consistent emphasis on the interests of everyone else's liberty. "True liberalism" should go as far as suppressing "the superstition of the nation" and destroying the separate sovereign state. On this basis, the author develops his political program of a democratic World State. At the same time, however, he discards domination by the "tyranny" of any majority rule and recommends a better "utilization of means" by a refined egoism. He recognizes the merits of outstanding qualitative achievements and the functional significance of leisure.

In the economic domain, Korner explicitly rejects not only the theory of marginal utility, other elements of the neoclassical price theories and the quantity theory of money, but also the gold standard and modern devices aimed at the manipulation of money value. He makes a daring attempt to establish a new exchange theory based on the "divergence of exchange value and price" and the "divergence of exchange value and the purchasing power of money" (Vol. II, pp. 224 ff.). On the basis of such divergencies, he analyzes the three magnitudes of "social services," "social money income," and "social product." The exchange-value relations of these magnitudes are treated as elements of an "income equation" and developed into sources of a stable price unit as a "stable standard of value." This standard is referred to

the service rendered by unskilled labor. According to Korner, full employment can best be secured with the help of a fixed minimum wage, expressed in his price unit at a stable value, and a variable maximum working time. These are the two components of the "working-time screw," a program of avoiding unemployment by decreasing the maximum working time, which he hails as a theoretical and practical panacea (Vol. I, pp. 61 ff.). As long as different countries and currencies prevail, this panacea should be backed by a free rate of exchange," which can allegedly be derived from the "price claim" of the exporter and the "price obligation" of the importer.

Although the author devotes hundreds of pages to the presentation of his exchange, price and money theory, the fundamental relations involved are neither systematically explained nor experimentally verified. Imaginative enthusiasm and emotionally motivated synthesis are more emphasized than rigorous analysis. Instead of referring his arguments *ad veritatem,* Korner often attempts to prove them by referring *ad autoritatem.* Such attempts result in a maze of long quotations from the publications of major and minor philosophers, poets, novelists, politicians, and economists. Since most of them are Germans and Austrians, readers who are not familiar with such publications are likely to be somewhat puzzled and disturbed. F. Nietzsche, A. Schopenhauer, J. W. Goethe, and F. Schiller are quoted scores of times. Yet, American and English students of economics will deplore the fact that the author entirely ignores the relevant standpoints of, for example, J. B. and J. M. Clark, T. Veblen, and F. H. Knight.

His critical arguments tend to be harsh, bitter, and unduly offensive. Not even Alfred Amonn, who wrote the Introduction, can entirely escape this kind of criticism. According to Korner, Amonn is wrong and "goes astray because he not only does not understand, but even disputes the divergence between exchange value and price" (Vol. I, p. 555). Amonn's attitude is all the more generous when he extols, in his introductory appraisal, the merits of Korner's book and contends that the "strong feelings" and "impatience" with which Korner criticizes certain views are "understandable" and "by no means out of place" (Vol. I, p. xxiii).

Nevertheless, Korner offers stimulating viewpoints to those who adhere to L. Mises', F. A. Hayek's and L. Robbins' doctrines of economic freedom or to H. C. Simons' "positive program of laissez faire" and reject Marxism as well as Keynesian economics.

THEO SURÁNYI-UNGER

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Geschichte der Volkswirtschaftslehre. By EDGAR SALIN. (Bern and Tuebingen: A. Francke. 1951. Pp. 205.)

Edgar Salin's *History of Political Economy* is no newcomer to the European student. The first edition of this challenging treatise was published in 1923. For more than a quarter of a century both graduate and undergraduate students have used it as their guide through the bewildering maze of past and present schools of thought. A Japanese edition appeared in 1935, a Spanish

translation in 1948. The fact that an English translation is in preparation may justify an appraisal of this fourth and enlarged edition.

A condensation of the essentials of economic ideas from antiquity to the most recent contributions is achieved in a volume of barely two hundred pages. "The historian has the duty to examine and to test" (p. 84 n.). On the other hand, an abundance of footnotes, quotations from source material, and an excellent index add substantially to the immediate practical value of the small volume.

The organization of the subject-matter is simple. The body of the book is divided in three parts: Pre-History, History, and what the author calls: Successors and Precursors. An excursus, Paths of Theoretical Research, closes the book with a brilliant discussion of economic methodology.

Pre-History includes the meta-economic doctrines of antiquity and the Middle-Ages, in both cases subordinating economic thought to the higher realms of political and religious life respectively. "Only the modernistic craze for progress could cause the belief that knowledge achieved by the sciences of today was beyond the reach of the man of antiquity and of the Middle-Ages, and that the general progress of the centuries and the particular superiority of our own era reveals itself in capitalist economy and doctrines. What actually has taken place is—not considering the alterations in economic conditions and the corresponding modifications of the contents of economic doctrines—a change in the attitude of man towards economy and towards knowledge" (p. 11).

History begins with the severance of the meta-economic ties. The suspicion dawns that there may exist connections between economic phenomena leading to autonomous economic laws. "No longer justification, but factual research, no longer apology, but analysis become means and ends of the exposition" (p. 51).

From these beginnings of the mercantilist era from which economics emerges as "political" science, the line is drawn to the Physiocrats and the Classical School. Against the changing background of philosophical thought, economics transforms itself into "systematic" science, culminating in the "pure, rational theory of Ricardo." His mathematical, individualistic method had to remain the model "for the progressive development of pure rational theory—from Marx to Clark and Schumpeter—" regardless of whether they accept or reject Ricardo's conclusions. "However," cautions Salin, "he who maintains that all economic doctrine is and has to be a social doctrine will inevitably consider Ricardo's method as a kind of dissection of a live body." Hence "Ricardo became the antipode to the German political economy of the nineteenth century" (p. 90).

Finally, in the nineteenth century metaphysical guidance is assumed by "that hidden idea, which was to replace the God of the Middle-Ages, as well as the nature of the eighteenth century: the idea of evolution" (p. 100).

Thus "evolutionist" science becomes the heading chosen to include both the socialist and the historical schools of the last century. *"Evolutionism* is the distinctive feature common to all economic and sociological doctrines of the

period, just as it is the guiding principle in philosophy and biology." It is to be found at the roots of "the socialist views and concepts of a Saint-Simon and a Marx, of the historicism of List, Hildebrand, Schmoller, of the sociology of Comte as well as of Spencer" (p. 101).

Highlights of the ensuing discussion of socialism are the synopsis of the work of Saint-Simon, and the concise but penetrating analysis of the Marxian doctrine. With regard to Marx's theory of labor value—which cannot be rejected without rejecting at the same time Ricardo and the Classical School—we find the following remark: "It should give cause for reflexion that even Schumpeter, who so insistently stresses his divergences with Marx, still considers the latter's conclusion correct, viz., that capitalistic development destroys the foundations of capitalist society . . ." (p. 114).

The chapter on historicism takes on a special importance as Salin's conception itself has its distant roots in that theory. His voice becomes somewhat warmer, and in parts, more passionate, when he recreates the picture of this period which may be called the period of lost opportunities for the development of a decisive, original contribution by German thinkers. "The real leaders of the historical movement remain outside of political economy" (p. 137), while the economists themselves did not make the new historical approach fruitful. The work of Friedrich List contains the materials needed to challenge effectively the supremacy of the classical school, as well as of Marxian theories. The full significance of his theory of productive forces, however, as opposed to the classical theory of values, could not be recognized prior to the retrieving of the scattered and lost writings of this thinker during the late 'twenties of this century. Eventually the crisis was precipitated and the German economy left without the guidance of one representative school, because of the failure of the younger historical school—and in particular of its leader Gustav Schmoller—to use the methodological controversy with Carl Menger as a starting point which might have led to the clarification of the (still) extremely important problem of the relationship between theory and history. Thus the isolated and sometimes great achievements of the next generation of German economists had to remain without influence upon the more striking development of the Anglo-American neo-classicism.

A solid attempt to order and to appreciate contemporary developments is made in the last chapter: Successors and Precursors. Only history decides who, in the long run, has been a successor and who has been also a precursor. The Schmoller school has found a distinguished heir in Arthur Spiethoff who combines its tradition with his own capacities of keen theoretical observation of economic reality. It is unlikely, however, that the historical school will ever again be taken as a starting point for new developments.

The reviewer cannot pass over the impressive monument erected to Max Weber in this chapter; these passages are among the best of the book. The author recreates with reverence a great personality, even though he feels compelled to reject the philosophy of Weber's work. Nor would this review be complete if it did not point to the remarkable sketch drawn of the equally outstanding, but far more problematic person and achievements of Werner Sombart.

The ensuing discussion of the contemporary schools of thought, carefully brought up to date in this latest edition, may be considered as the most challenging part of the book. In factual information the chapter is a masterpiece of conciseness. As to the conclusions reached, the following statement may give an idea of the author's appreciation of recent achievements: "The rational theory in all its manifestations comes closer and closer to reality. Sober research which, due to keen observation and statistical comprehension, achieves a numerical grasp of partial fields of economic reality, of their composition and their dynamics, has abandoned the vacuum of its theoretical beginnings and has prepared valuable instruments for the recognition and mastery of the present and future politico-economic problems" (p. 168).

The challenging character of the book stems from the prevalent attitude of its author which has been incorrectly designated by a prominent American economist as hostile to rational theory. The author is not hostile to rational theory, as is obvious from the appreciative recognition freely given to all outstanding achievements attributable to its methods. But he is hostile to the trend which considers the methods of rational theory the only possible and adequate ones to approach current and past economic problems. The findings of Salin the historian bear out the results of the annexed methodological Excursus in which Salin the economist brilliantly defends the thesis of the philosophically limited validity of pure rational theory, and suggests instead the development of what he calls *Anschauliche Theorie,* which could tentatively be rendered as "essential (intrinsic) theory."

However, it seems to the reviewer to be beyond his task to attempt even a simplified outline of this methodological study. No matter what the reader's personal point of view on the subject, here as in the rest of the book he will always find a stimulus to his own thinking. Indeed, in our time when specialization is carried to frightening extremes, the contact with a synopsis written by a qualified author of broad vision and originality can scarcely be overestimated.

HARRY W. ZIMMERMANN

Toledo University

La Courbe d'Offre. By JANE AUBERT. (Paris: Presses Universitaires de France. 1949. Pp. 266. 600 fr.)

La Courbe d'Offre is written by a former student of Edward Chamberlin of Harvard University, and he contributed the preface. (An apology is due Dr. Aubert that the book was received for review so tardily.)

The book is focused upon the identification and description of "supply curves" in monopolistic situations. The presentation is divided into two main parts, a short-run and a long-run analysis, and in each of these parts discussion of non-reproducible goods precedes that of reproducible goods. Within each of these categories, in turn, she begins with monopoly, goes on to competition, and finally to monopolistic competition. Situations in which a firm takes into account the reactions of rivals to its policies are excluded, though effects of advertising on demand for the firm's product are considered.

The main core of the work is in the two chapters on short-run supply and

monopoly, and in the extension of these to the individual enterprise under monopolistic competition. Despite Chamberlin's enthusiasm, this reviewer could find nothing significantly new in the treatment of "collective" supply under monopolistic competition; discussion of this topic seemed to be essentially a restatement with greater elaboration of the arguments presented by Joan Robinson in 1933. The long-run analysis adds some interesting modifications and details, but most of what is said there is either widely recognized in the literature of economics or an obvious extension of the discussion in the first half of the volume. It is therefore on the short-run analyses of monopoly that this review will center.

Although Dr. Aubert stresses the salient case of reproducible goods, her comments on non-reproducible goods are from one point of view more interesting. Here the analysis of the offerings of the monopolists takes into account not only the elasticity of demand for the product but also the seller's anticipations of demand changes, his direct subjective valuations of the good, and his needs for cash. She herself hardly seems to recognize some of the potentialities of her own lines of thought; instead she strains to establish her monopolistic "supply curve."

The author is exceedingly ambitious in her goal of constructing a monopolistic supply curve. By her own criteria she is something less than successful, but does not seem to recognize this fact. On the other hand, she is by no means naive in her treatment of the problem.

She recognizes that much analysis of monopoly is concerned only with a "supply point" which is neither a "supply price" nor a "supply curve." In fact, in dealing with both non-reproducible and reproducible goods, she specifically states that if the monopolist knows exactly the demand for his product, there will be a supply point only and not a supply price. But what she says of the monopolist is equally true of the competitive seller; his individual supply schedule is reduced to a single supply point when one fixed demand for his firm's product is assumed. No supply curve, competitive or otherwise, can be conceived without admitting assumed variations in demand for the firm's product. The basic differences between the competitive and monopolistic cases are at least partially recognized by Dr. Aubert: (1) The demand for the product of a monopolist is identical with industry demand (unless some detour can be invented) and hence the assumption of various demands for the firm's product involves identical assumptions of various industry demands. This is just another way of stating that for any given industry demand there is under monopolistic conditions what might be termed a "supply point dilemma" that can be evaded under competitive assumptions. (2) When the demand for the product of a competitive seller is identified, so also is the price at which he can sell, whereas the demand for the product of the monopolistic concern encompasses a whole range of prices. What the competitive seller will offer at various demands for the product of his firm is also what he will offer at various prices since by definition he faces an infinitely elastic demand. What the monopolistic seller will offer at various demands for the product of his firm is a price-quantity package all tied up together. The direct relation is between marginal revenue and amount offered, not between price and

quantity. Only in so far as price can be tied directly to marginal revenue, and to it alone, can a monopolistic supply curve be unambiguously identified. But this is possible only under specific limited assumptions (as one may choose) concerning the family of demand curves for the product of the firm.

It is the first of these two interconnected problems that seems to have given the author the greatest concern, and led her to introduce the concept of "virtual demand" to be set off against real or actual demand. She apparently wanted to find some way of admitting variations in hypothecated demands for the product of the monopolistic firm *without* thereby implying corresponding variations in the hypothecated actual industry demand. Virtual demand is what the seller *thinks* demand to be. But here a confusion in her thinking becomes evident. To separate "virtual" from "actual" demand is not the same as to separate demand from the point of view of the competitive firm from that of the industry; from each of these points of view there may be both "virtual" and "real" or "actual" demands. This confusion is evident when quite unnecessarily she introduces the seller's uncertainty as a reason for variations in "virtual" demands (and not merely for their deviation from "actual" demands), yet fails entirely to discuss the effects of uncertainties on sellers' behavior.

Having persuaded her demand curves to vary by this unnecessarily roundabout approach, Dr. Aubert then uses them to construct "supply curves" by identifying a series of maximum-profit price-quantity points associated with the various "virtual demands" for the firm's product. She does this on each of the three following sets of assumptions: (a) the seller considers his estimate of the slope of demand to be correct but otherwise demand may vary (actually she simply finds the maximum profit points for a set of "virtual" demand curves all having the same slope), (b) it is assumed that the demand will have a given elasticity at any given price, and (c) it is assumed that the demand will have a given elasticity for any given quantity exchanged. The results (which are traced through for various cost situations) are quite interesting and this reviewer would not quarrel with them if they were regarded simply as pictures of the course of adjustments to specified patterns of demand change. On the other hand, despite Dr. Aubert's claims it is clear that what she has constructed is not a supply curve, by her definition of supply or any other. As a magic potion to resolve the "supply point dilemma" the concept of "virtual demand" is a failure; it is a pity that it was not used for the purposes to which it is better adapted.

Dr. Aubert demonstrates her concern over the problem of converting the marginal revenue-quantity into a price-quantity relationship by attempting to do precisely this. She shows that (for her cases of straight-line "virtual" demands) the price at which any given quantity would be offered equals $\frac{1}{2}$ (C_m plus OD) where C_m is the associated marginal cost and OD is the distance from the origin to the intersection of the associated demand curve with the Y axis. She might have gone on to show how this formula could be generalized to apply to nonlinear demands by the use of a tangent to the marginal revenue curve. However, the indirectness of the price to marginal revenue relationship would then have become more obvious. And does this

in any case really contribute to our understanding of the nature of monopolistic supplies or to the construction of a genuine monopolistic supply curve?

This reviewer's impression of Dr. Aubert's work can be summed up briefly. The book suffers primarily from an excessive emphasis on trying to identify and construct "supply curves." On the other hand, it shows ingenuity throughout and is suggestive at many points.

MARY JEAN BOWMAN

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The Ethics of Redistribution. By BERTRAND DE JOUVENEL. (New York: Cambridge University Press. 1951. Pp. ix, 91. $1.75.)

To perform certain functions, men require considerable means and amenities. But tax laws regard the expenditures for these means and amenities in a different light depending upon whether the expenditures are assumed by men out of their own incomes or by corporate bodies. This is the day of a new expense-account élite. "The trend of our day is therefore towards the reproduction of the medieval situation: *Nul homme sans seigneur*."

The gems in de Jouvenel's discussion of income redistribution are in his variations on this and a few other closely related themes in the second of the two lectures comprising this small book. It is less a book on the ethics of redistribution than on cultural consequences, often neglected in the common preoccupation with possible disincentive effects of redistribution. Except for a critique of socialist aspirations, the book hardly explores ethics; it abounds, however, in stimulating hypotheses on the indirect and intangible repercussions of equalization. It is primarily an attempt to show that, just as poor economies require inequality for capital accumulation, so also wealthy economies today require inequality for cultural accumulation.

The first of the two lectures unhappily reveals, as do all discussions of redistribution, the narrow limitations of man's knowledge of its effects. One of de Jouvenel's major purposes is to criticize socialist and egalitarian reformers, "not that their means are unrealistic, but that their ends are flatfooted" (p. 48); but I did not find that he had marshalled the kind of evidence needed to justify his appraisal of them. To some extent, this is because he needs evidence that is not available; but in part it is because he leans heavily on oversimplified deduction from debatable facts, trusting logic to carry him across chasms not spanned by empirical observation.

For example, is it true, as de Jouvenel says, that there is "at least a *prima facie* incoherence" in the socialist's objection to an individual's enjoying the riches that the socialist wants for all? On the contrary, if differences in status and power among individuals are important to our values, and if these differences rise from income inequality, it is clear that what is good for all is not necessarily good for a minority alone. The "ifs" call for the elaborate paraphernalia of systematic observation more than for the cutting edge of logic; the power of deduction is largely wasted if major premises are faulty.

Yet here is a man who stocks our intellectual streams with ideas. This

book is an angler's delight. If some of de Jouvenel's fish are too weak to survive shipment, so many others are vigorous that it would be a mistake to ask him to remain to care for them rather than make another trip for more.

CHARLES E. LINDBLOM

Yale University

The Process of Economic Growth. By W. W. ROSTOW. (New York: W. W. Norton & Co. 1952. Pp. x, 285. $4.50.)

The contents of this volume could be summarized approximately thus: Static (and short-run) economic analysis, as taught by the neo-classical school and as practiced in modern economics, has been "developed within Marshallian short-run assumptions, that is the social and political framework of the economy, the state of the arts and the levels of fixed capacity are assumed to be given and, usually, fixed." Such assumptions are inappropriate, however, for the comprehension of longer periods, where what could have been assumed as given in the short run undergoes itself major changes. These major transformations in the political, social, cultural and technological framework of economic activity involve a myriad of variables that cannot be usefully studied unless classified in a convenient manner. Such a classification of the historical material deemed relevant to economic growth is offered in the form of six "propensities" that jointly account for the "motion" of what is treated as data in short-run economics. These propensities are: (1) the propensity to develop fundamental science (physical and social); (2) the propensity to apply science to economic ends; (3) the propensity to accept innovations; (4) the propensity to seek material advance; (5) the propensity to consume; (6) the propensity to have children. Most, if not all of these "propensities" have "sectoral propensities" serving under them, while "variables" are treated as platoon leaders of numerous "sub-variables." Since these "propensities", "sectoral propensities", "variables" and "sub-variables" refer to non-economic aspects of the historical process, the exploration of their origins, their nature and their manifestations is not regarded by the author as part of his present undertaking. This task he assigns to historians, psychologists, sociologists and other social scientists who, thus suitably briefed, may buckle down and dig up the requisite material to fill the freshly constructed boxes.

The presentation, elaboration and justification of this new taxonomic device occupy about one-half of the volume's space.[1] The balance is devoted

[1] Even so, the exact meaning of the term "propensity" as used by Professor Rostow remains somewhat obscure. As defined in dictionaries "propensity" is a synonym of "inclination" and indicates a psychic state. As introduced to economics by J. M. Keynes "propensity" is a functional relationship, "propensity to consume" for instance being the name of the relationship between consumers' expenditures and national income. This important distinction is blurred throughout Rostow's discussion. A number of passages in the book suggest that it is in the sense of "inclination" that the expression "propensity" is used. Elsewhere "propensity" seems to be treated as a functional relationship, but where this is the case it is left uncertain what is being related to what. Nor is it by any means clear why

to essays on historical themes of not altogether obvious relevance, to a rich assortment of the author's *obiter dicta* on a wide variety of current and historical topics, and finally to a rather discursive chapter on "Economic Theory and Public Policy" commenting on some recent United Nations reports, on the International Bank for Reconstruction and Development and on similar matters of general concern, as well as enlightening the reader about Professor Rostow's judgments about many aspects of political and economic affairs. While all this undoubtedly provides diversified if at times somewhat tiresome reading, it can hardly be said to advance materially our knowledge about the "process of economic growth" or to help to bring into sharper relief the relevant issues.

Rostow is certainly on the right track in stressing the utter inadequacy of the apparatus of conventional economics for dealing with the problem of economic development. He is also on firm ground when insisting upon considering economic growth as reflecting the interaction of "economic, social and political forces which determine the current social fabric, institutions and effective political policy of the society." Yet he is greatly misled in believing that it is by interdisciplinary cooperation—this nowadays fashionable counsel of despair—that the understanding of this interaction can be furthered. Five narrow specialists in five narrowly defined disciplines do not become a powerful brain trust of social science merely by being in committee assembled.

What could give new impetus to thought and promote better insight in reality are either new hypotheses suggesting previously unsuspected relationships among historical phenomena or new research testing available hypotheses in the light of historical evidence. The book under review embodies neither. Such earlier attempts as were made at evolving a theory of social and economic development are dismissed in a rather cavalier fashion. The decomposition of the feudal order, the "primary accumulation of capital" marking the beginning of modern capitalism, as well as the "laws of motion" of capitalist societies were extensively studied by Karl Marx nearly one hundred years ago. Accepting or rejecting his method and his conclusions, although essentially following in his footsteps, Lenin, Rosa Luxemburg, Hilferding, Kalecki, Schumpeter, Sweezy, and quite recently Domar, Harrod, Joan Robinson have tried to elucidate the conditions under which capitalist economies could continue to expand their per capita output and provide in the process of this expansion for steady rates of growth based on full utilization of available human, material and scientific resources. Starting from different premises and travelling different routes, all these investigators have reached at least one common result: in a capitalist system cyclical disturbances, more or less severe unemployment, less than potentially attainable rates of growth appear more probable than continuous harmonious expansion.

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the six propensities listed above were singled out for special consideration. The propensity to go to war, the propensity to engage in civil strife, the propensity to navigate, the propensity to plunder other countries, the propensity to worship God and many others could with equal or more right claim a place in the sun.

While for Marx there was no cure for this malignant disease *within* the capitalist order, the writers of the Keynesian school expect the state to serve as the stabilizing factor by providing for a smooth flow of investment of the right size, of the right kind and at the right time. Nor do they consider this pivotal function of the state to be peculiar to advanced capitalist countries. The state is also invoked for the solution of the problems facing the backward capitalist areas. There it is to break through the vicious circle of poverty caused by insufficient investment, and insufficient investment caused partly by poverty and partly by the diversion of what little could be saved to unproductive uses. Hence to both schools of thought the problem of economic growth in both advanced and underdeveloped capitalist countries reduces itself essentially to the question whether the state in capitalist societies is capable of discharging the function of stabilizing and systematically raising the level of output, employment and real income.

Answers to this and to related questions have to be sought in the theory of the state, in the understanding of the locus of political and economic power in a capitalist society, in the appraisal of the nature, intensity and "specific weight" of the relevant interests. Needless to say, none of the established social sciences is of much help in this search. What is needed is a theoretical apparatus encompassing not compartmentalized sectors of social development but presenting a framework for the analysis of the historical process as a whole, not losing itself in a maze of details but focusing attention on its most powerful propelling forces, not erected on a level of vacuous generality but "generated at no great distance from bodies of agreed fact" (p. 3). Such an apparatus is supplied in its main components in the work of Karl Marx. Progress and accumulation of additive knowledge in the social sciences will be attained not by rejecting without prior examination, let alone comprehension, all Marxian thought—as has become customary in our time—but by a conscientious effort to test in the light of available experience the hypotheses that it contains. Indeed truth is always concrete—it can only be approached by confronting plausible generalizations secured from the study of earlier experience with the constantly changing reality. Forgetting this fundamental principle of all fruitful research leads either to a regression to the state of infancy of all scientific endeavor—classification—or to the invention of ever new "theoretical" constructs that explain with much pomp and circumstance a nation's economic growth by that nation's propensity to grow.

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Le Neo-Libéralisme: Étude Positive et Critique. By JACQUES CROS. (Paris: Librarie de Médicis. 1952. Pp. iv, 413.)

This is an ambitious volume presenting at the same time an historical analysis of the decline of liberalism and the rise of collectivism, a general theory of neoliberalism and something approaching a "Neoliberal Manifesto." In attempting to achieve so formidable an objective it falls short of its goal in many respects, but its very shortcomings make a valuable contribution to

an understanding of the strengths and weaknesses of a revived liberal cause.

While vigorously expressing the liberal's aversion to planning and socialism, he candidly revises some of the fundamental assumptions in a chapter entitled "Agenda of Liberalism." In his view, law is the foundation of liberty and unity in social life which must therefore be subject to its control. Property for instance is a creation of the law. "As a result, the state may at any time, whenever necessary for the good social order and the free development of economic activities, determine the legal framework [*régime juridique*] without a possible objection on the ground of some absolute right of property; men own natural and limited resources as tenants for humanity, not as sovereigns, and as such have both rights and obligations" (p. 150). He freely admits the need for theoretical and practical development not so much of a delimitation of a public and private sphere, but of a new synthesis. Among problems to be fully explored he lists forms of public intervention compatible with the price mechanism, the position of a liberal economy in periods of rearmament, international relations between free states, and their coexistence with totalitarian states, and internal reforms needed to solidify a free society—a staggering list suggestive of the weakness of neoliberal thinking to date.

Cros himself is very conscious of the divergencies hidden behind a common façade. One of the most stimulating chapters of his tome is a juxtaposition of the theories of Walter Lippmann (mainly in his *Good Society*) and W. Röpke (*cf.* review of his *Social Crisis of Our Time* in the *American Economic Review,* Dec. 1951, XLI, 962-64). Röpke clearly represents the more traditionalist, antimassist, antirationalist school of neoliberalism, Lippmann the more pragmatic, modernist and empiricist. Lippmann accepts by and large modern industry. Röpke voices nostalgia for a Jeffersonian society of small farmers and artisans. According to the author, Röpke proceeds by deduction, Lippmann by induction. Röpke's point of departure is man, Lippmann's a society of men. Accordingly, the former may be classified as internalist, the latter as externalist. The author's conclusion (p. 220) is that Röpke's system is the more satisfactory one if we accept the function of theory as a link between philosophy and science, largely a formal test; whereas Lippmann's ideas, while more practical, lack cohesion, consistency and a sound grounding in economic theory.

Opinions will vary as to the degree of success achieved by the author in his aim of reconciling the various schools of neoliberalism and of constructing a sound underpinning of economic theory. Perhaps it is too vast an enterprise for any single economist. Perhaps the author's method of presenting views and quotes of a large array of authors tends to confuse his own thought pattern, at least in the reader's mind. Yet, he seems to be on firm ground and fertile soil in many particulars. He is right in claiming Keynes as a neoliberal, even though, as he says, he was a collectivist to the liberals and a liberal to the collectivists. Apparently the neoliberal is not to be identified or confused with the neoclassicist. Nevertheless, while Keynes has made important contributions to neoliberal theory, he has not worked out *the* theory of neoliberalism.

One other point shared by most neoliberal writers is an apparent agree-

ment on the necessity of again bringing together all social sciences. Cros in particular insists on combining the approach of economics, political science, sociology and jurisprudence or, as he puts it, on studying conjointly the problem of Power, Contract and Economics (p. 392). Purchasing power means to him literally what it says, namely, a species of power.

This may not be the long expected magnum opus on new liberalism; but it will certainly contribute some of the building stones.

FRANK MUNK

Reed College

What Do Economists Know? By BENJAMIN HIGGINS. (New York: Cambridge University Press. 1952. Pp. vii, 166. $2.75.)

The wide scope of this thought-provoking volume is best indicated by its sub-title: Six Lectures on Economics in the Crisis of Democracy. It is explicitly addressed to the intelligent layman and to elementary economics students. I should add that the many and controversial questions which it raises should stimulate useful discussion for review and appraisal by senior majors in economics. The special usefulness of the book for readers like these lies partly in its broad perspective and partly in its discussion of material often neglected in the regular curriculum, such as methodology, the various "schools" of economic thought, and the relation between economics and other social studies.

The strength of this volume is also its weakness, for the coverage of so much territory in so little space has made it impossible to do justice to many thorny problems, or adequately to qualify some of the generalizations and conclusions.

The first lecture generally accepts Lionel Robbins' definition of the economic problem and only slightly modifies his view that economics must take as given institutions, technology, and obvious psychological principles. The method of economics is not and must not be purely deductive, for its deduction must be preceded by observation and followed by empirical testing. By these methods economists have acquired *much* useful knowledge, including the development of three types of laws: *a priori* laws (*e.g.*, $MV = PT$); deductive laws (*e.g.*, if monopolies maximize profits, then a corporate profits tax cannot be shifted); and empirical laws (*e.g.*, the consumption function). Although economists "know" a great deal, they must recognize that policy recommendations can never be made on the basis of knowledge alone, but depend ultimately upon value judgments as well. These value judgments should be explicit. Furthermore, there are important areas where our knowledge is especially inadequate. We know far too little about the determinants of the behavior of entrepreneurs and of social groups (*e.g.*, labor unions). Despite these inadequacies, however, economists know enough that, if given "unlimited legal powers," they "could maintain full employment without inflation; could produce a close approximation to an optimum allocation of resources and a fair approximation to an optimal rate of economic progress; and could improve the income distribution at the same time" (p. 28).

The second lecture is devoted to a provocative "caricature" of four major "schools" of economic thought which are initially distinguished chiefly on methodological grounds but each of which also tends to reach its own distinctive outlook regarding the social order. The four schools are the neoclassical, the Marxist, the institutionalist, and the Keynesian. In fact, Higgins points out, few economists could be found who fit wholly into any one of these groups, and any good economist combines contributions from each of the four.

In his third lecture Higgins argues that because of the general acceptability of two fairly simple value judgments (p. 63) the goals described at the close of the next to last paragraph can be unambiguously defined (*e.g.*, the meaning of optimum) and accepted as noncontroversial objectives of economic policy. Furthermore, "except for the optimum distribution of income," they "can be cast in terms that are either measurable or recognizable" (p. 83). Arguments are also given to support the view that these goals are not contradictory to one another, but supplementary, and that the policies required to achieve them are not only known, but can be achieved without sacrifice of freedom of speech, press, assembly, election, and choice of occupation. The reasons that society fails to achieve these objectives are (1) misunderstanding, and (2) the general desire to exercise another freedom—the freedom to exploit.

Lecture IV begins with a discussion of the economic elements in domestic social conflict, and continues with comments on the economic causes of international war. Reasons are given for the view that many economic causes of conflict within states would exist even under pure competition, and that monopoly increases the number and intensity of these causes. The chief economic causes of war are the combined facts that (1) states are not equal in natural endowment, (2) they do not solve their domestic economic problems, especially deflation and inflation, and (3) they endeavor to solve problems arising from both (1) and (2) by following nationalistic policies of restriction on immigration and trade. These policies have proved historically not only detrimental to others, but also ineffective even for the national objectives sought.

In his fifth lecture Higgins discusses the special problems of what he calls the "Big Three"—the major organized economic groups of western societies—business, labor, and the farmer. The effort of each to seek its own ends without due consideration for the problems of society as a whole presents a major element in the present crisis of democracy. In Lecture VI it is pointed out that no social program can be effective if it is strongly opposed by any one of the Big Three, but that almost any policy will be so opposed if these groups continue to follow exploitive objectives.

Our best hope to maintain democracy lies in a mixed economy, but no *system* can by itself solve our problems. Any society requires knowledge and good will. The latter demands that all groups accept codes of ethics which establish responsibility toward the whole society. The former requires the contribution of economists as well as, and working together with, others. Higgins closes his book with a list of the specific responsibilities of economists in this situation.

The author has been helpful by not hesitating to express his views on many controversial questions, and each reader will have his own criticisms of these views. Some of the statements or implications raise questions like these in my mind: (1) How can one weigh the adequacy of an economic system, or build a theory of economic development (the author urges both) while retaining Lionel Robbins' view that economists must "take political systems as given" (p. 4) and refuse to examine the causes of changing institutions (p. 6)? (2) Do economists really agree so closely that they could "formulate answers, satisfactory to the majority of professional economists, to any policy question that is clearly put" (p. 59)? Is it adequate to imply that the only important disagreements among economists on economic matters are on "details of method" or "questions on the frontiers of knowledge" (p. 31)? (3) Have we really solved the problem of full employment without inflation in a mixed economy, as the author seems to me to imply? (4) Are not the objectives of an economy (*e.g.*, optimum distribution of income and maximum productivity) in important ways in conflict with one another, unless we really dodge the question by appropriate juggling of the word "optimum" in each objective? (5) Lastly, would it not be extremely dangerous in times of growing McCarthyist hysteria to propose virtual licensing of economists, *even* by the profession itself (as suggested on page 162: "The time has come when no one should be allowed to call himself an economist, or to give professional economic advice, who has not met standards laid down by the profession")?

Questions like these cannot be regarded objectively as criticisms of the book, since many readers would answer them as Higgins has, rather than as I should. My own appraisal would include appreciation for the welfare focus, the balanced judgment, and the constructive tone of the volume.

I find few errors. Probably "marginal rate of substitution" is intended rather than "elasticity of substitution" on page 9 and elsewhere. Supply and demand elasticities are infinite, not zero, in pure competition (p. 90). The International Trade Organization is not functioning, as stated on page 105, since it was never born, thanks to the "exploitive policies" of the United States Senate.

JOSEPH W. CONARD

Swarthmore College

Readings in Price Theory. Edited by GEORGE J. STIGLER and KENNETH E. BOULDING. Vol. VI of American Economic Association Series of Republished Articles on Economics. (Chicago: Richard D. Irwin. 1952. Pp. x, 568. $5.00.)

This sixth Association volume of republished articles includes 25 papers grouped under the seven headings of "Utility and Demand," "Costs and Returns," "Stocks in the Theory of Prices," "The Rationale of the Firm," "Imperfect Competition," "Spatial Competition," and "Theory of Games." With the exception of Slutsky's 1915 paper, "On the Theory of the Budget of the Consumer," and Viner's 1931 paper on "Cost Curves and Supply Curves," all originally appeared in English-language journals, and 12, or nearly half, appeared in the *Economic Journal* or *Economica*. Dates of original publica-

tion range from 1914 to 1948, but only two are from the years before 1920 and ten are from the most recent decade. None of the 28 economists represented is honored by more than one selction.

Realizing the vast number of articles which can ge grouped under the general heading of "price theory," the editors sensibly limited the area of choice in various ways. Thus, they decided to concentrate on "what might be called the mechanics of the pricing process" and on articles "of general theoretical interest," or, in other words, to exclude articles "dealing principally with welfare economics" or "more in the nature of applied economics." Their interpretation of "mechanics" is fairly broad, however, since selections 7, 8, and 12 are concerned primarily with social cost; and the "general" of their "general theoretical interest" sometimes applies only to the nature of the subject matter and not to "the general economic reader." A further limit placed upon the area of selection represents a deliberate decision concerning the uses of the volume. When the editors decided to look upon "the collection as an adjunct to, rather than as a complete substitute for, the literature which is generally available in libraries," they also decided in favor of a more scholarly use as against a more textbook-like—or handbook-like—use of reprints.

Although Stigler and Boulding do not say so, I suspect that one purpose which they had in mind was to portray the development of thought over the past 40 years. Not only are the articles within each of the sections arranged in chronological order (with the appendix-like chapters on statistical demand studies and statistical cost curves the only exceptions) but some of the selections from earlier years seem to be included chiefly because of their historical importance. The best example of this is Slutsky's 1915 paper, to which Hicks and other contributors to indifference-curve analysis have generously paid their respects. Another example is Knight's 1924 paper, "Some Fallacies in the Interpretation of Social Cost." The Ellis-Fellner 1943 article on "External Economies and Diseconomies," which is also included in the *Readings*, covers much of the same ground and is more helpful to a contemporary reader.

Criticisms directed against an anthology of price theory can be of various types, including: (1) the selections are not of high quality, (2) the selections do not sufficiently well represent the various areas and emphases of thought, (3) the editors have not properly weighted the various areas and emphases of thought. In the present instance any complaint of the first type would clearly be unjustified. Complaints of the other two types cannot be free of personal bias. As Stigler and Boulding state in their disarming Introduction, "it is not unusual for the contents of a book to be influenced by the particular men who fashion it"; any dissent from the editors' choices must reflect an equally personal viewpoint.

Part I, "Utility and Demand," is where I most strongly question the representativeness and weighting. As is stated above, Slutsky's 1915 article, which takes up 30 pages and which cannot be followed by most economists, is now of little more than historical interest. Hicks and others have expressed the same thoughts in a more succinct, communicable manner. The selection which follows it, Friedman and Savage on "The Utility Analysis of Choices Involving Risk," is an intellectual *tour de force*, but its 40 pages contribute little to

either prognostication or welfare analysis. On the other hand, the editors have not included any paper to place indifference-curve analysis in its proper perspective, although J. M. Clark's brief and highly readable "Realism and Relevance in the Theory of Demand" (*Jour. Pol. Econ.*, 1946, pp. 347-53) is available. Neither have they included any article which attempts to give substance as well as a formal framework to consumer demand theory.

Mention has already been made of the emphasis which Part II places on social costs, in spite of the editors' decision not to cover welfare economics in the present volume. Omissions worthy of notice are: articles dealing with multiproduct and multiprocess output, cost uncertainties, costs during periods of fluctuation, and the opportunity nature of costs. Editorial modesty and the rule of non-duplication doubtless were responsible for one of the omissions here. Stigler's "Production and Distribution in the Short Run" has already been reprinted in *Readings in the Theory of Income Distribution.*

I suspect that all that Part III, "Stocks in the Theory of Prices," contributes is a new, somewhat more elegant way of expressing familiar considerations. However, the application of liquidity theory to pricing problems is still sufficiently untried to force suspension of judgment.

Part V, "Imperfect Competition," contains five familiar friends and omits others. Its previous reprinting in *Readings in the Social Control of Industry* doubtless explains the nonappearance of J. M. Clark's "Toward a Concept of Workable Competition." Readers must guess why the editors do not include any other paper on market classification or such an influential article as Hall and Hitch, "Price Theory and Business Behavior" (*Oxford Economic Papers*, 1939, pp. 12-45).

As in the earlier volumes of *Readings*, the editors have appended a valuable bibliography, covering English-language general professional journals for the period 1920-1949 and including short lists of important articles which were published in German, French, Italian, and Swedish.

HENRY M. OLIVER, JR.

Indiana University

Income Analysis. By RICHARD V. CLEMENCE. (Cambridge, Mass.: Addison-Wesley Press, Inc. 1951. Pp. vi, 182. $2.50.)

This neat, bantam-size volume is designed as a general introduction to macroeconomic analysis. Part I, on the Elements of Macroeconomics, contains chapters on the Model System, the Circular Flow, the National Income, and Income, Output, Employment and Prices. Part II, on the Capitalist System, holds Consumption and Saving, Investment, and Cyclical Fluctuations. Part III on Modified Capitalism devotes its one chapter to the Role of Government.

Clemence develops the national income concept with the emphasis on producing firms, with government production being "simply the services performed by Government employees" (p. 42). In a footnote he writes that "the foreign balance is not relevant to the present analysis" (p. 39n). These important relations, however, could have been introduced without unduly protracting the exposition.

Elucidating the functioning of the capitalist system, Clemence lags consumption behind the preceding period's income. Planned and realized investment are distinguished, with the former having induced or autonomous characteristics. Induced investment provides a wedge for the Acceleration Principle, linked to consumption outlay. Within this framework, and with the further argument that the marginal propensity to consume falls as income rises (p. 123), cyclical fluctuations (Chap. 7) are derived. The point is made that "an equilibrium level of National Income exists only if Planned Savings, Planned Investment, and Realized Savings-Investment are all equal at that level of income" (p. 119). It is doubtful whether this proposition is as important as one enunciating conditions for *full employment income equilibrium.*

The chapter on the Role of Government is confusing for it is not always clear whether it is a statement of how our federal government *does* behave, or whether it merely conveys current views on how it *should* intervene. Despite some cognizance of the "balanced budget theorem," it is asserted that "the over-all effect of a balanced budget is *neutral,* since Government draws from the income stream just what it returns in any period" (p. 145). It is legitimate to ask whether budgetary balance at $100 billion is as "neutral" as balance at $1 billion.

Aside from Chapters 3 and 4, which contain some income data as well as one output and employment chart, there is not a "live" statistic in the entire volume, be it on money supply, interest rates, price level, employment, federal budget, personal income distribution, etc. This is surprising in that his definition of economics betrays an institutional bias, and aggregative analysis does lend itself to concreteness.

These are defects which can be remedied by the instructor. If so, the book ought prove to be a very serviceable short text for an introductory course. If its scope were pushed a little further, its usefulness would be enhanced enormously.

SIDNEY WEINTRAUB

University of Pennsylvania

Intermediate Economic Theory. By STEPHEN ENKE. New York: Prentice-Hall. 1950. Pp. xx, 573.)

This is a well-written textbook, whose workmanship clearly reveals the author's professional competence. The level of the book is described as "intermediate," but it is closer to the elementary than to the advanced. Virtually all of Part I, which outlines the components of the national income, can be found in many of the better elementary textbooks as can the discussion of monetary theory in Part II. Part III (Income Theory) is a brief, lucid explanation of the Keynesian system, most of which can also be found in Tarshis, Samuelson, Bowman and Bach and other modern elementary books; Chapter 12 (an exposition of Keynesian "general equilibrium") and 14 (a discussion of the interrelation of costs, prices and national income) are somewhat more advanced.

Part IV (Price Theory) is a good exposition of the theory of price determination. Successive chapters consider price determination in a single market, interrelated markets, marginal utility and the individual's demand curve, the

firm's cost and supply functions, and the interrelation of firm and industry. There are also chapters on monopolistic competition, monopoly, monopsony and related topics, price discrimination, and the interrelation of resource allocation, monopoly and the "general welfare." The exposition in Part IV is of high quality; it does not, however, attempt to take the student very much farther than would some of the better elementary texts. A similar comment applies to Part V, which expounds the principles of income distribution with two chapters devoted to wages and one each to rent, interest and profits. Part VI (Political Economy), after a short introduction on the objectives and limitations of economic policy, is devoted to a discussion of the relative merits of capitalism and socialism.

There are four technical appendices that deal with more advanced material; the first of these (3 pages) concerns the relations among average, total and marginal curves; the second (17 pages) explains briefly the dynamics of savings, investment and income; the third (3 pages) discusses the definitions of saving and investment; and the fourth (25 pages) expounds indifference curves, product isoquants, etc., and their relation to the optimizing behavior of individual firms and consumers. Minor criticisms might be offered on matters of detail, but they would not be of material importance.

The utility of this book to the instructor of a "second course" in theory will depend upon the character of the elementary course. If the student's elementary course leaned in an institutional direction, he may find this a very satisfactory text. It also has considerable merit for those needing a refresher course in theory. But for students whose elementary training stressed theoretical material, this book is insufficiently advanced.

The basic difficulty of a book such as this is that the better elementary books are, as far as their handling of economic theory is concerned, quite adequate for anyone below the graduate level. The student's difficulty is not so much failure to understand the logic of economic analysis (although there is plenty of trouble on this count), as it is an inability to comprehend the relation of theoretical models to the "real world." In the field of national income analysis, where "reality" itself is a set of constructs, the problem is not so acute as in price theory, where the relation of demand and cost curves to the behavior of actual firms and industries is simply not explained in existing textbooks. Each chapter in an intermediate text in price theory should, in my opinion, consist of a brief restatement of one or two theorems (learned in an elementary course) followed by a few industry or firm case studies which (allegedly) illustrate their operation. But it is not fair to blame the author for failing in what he did not attempt. As it is, his arrow comes close to its mark, but he might have chosen a better target.

Melvin W. Reder

Stanford University

The Economic Process: Its Principles and Problems. By Raymond T. Bye and William W. Hewett. (New York: Appleton-Century-Crofts. 1952. Pp. xii, 1025. $5.50.)

In the last twenty-five years, among other works, Professor Bye has written several editions of a text on economic principles and, together with Professor

Hewett, he has written four editions of a text on applied economics. In the present joint effort, *The Economic Process,* these authors have altered their former plan. The one large volume presents both the principles and problems of economics; frequently the economic principle and its related applications are developed within the same chapter.

This book is undoubtedly intended for use as a college text for the basic course in economics. For the departments which desire to offer six semester hours of college credit in principles and problems of economics, this text provides an excellent arrangement both as to content and coverage. For the departments desirous of offering three semester hours in principles of economics followed by three more semester hours in economic problems, some awkwardness will arise through the lack of a ready cleavage between the material dealing with economic principles apart from economic problems.[1] Where it is desired to offer five or six semester hours of credit in principles of economics alone, the principles portion of this text will have to be supplemented somewhat to give sufficient depth of coverage.

For the rare general reader who seeks knowledge of economics for reasons other than college credits, this book is strongly recommended for its coverage of the subject and for the philosophy and clearness of style of the authors.

Salient features of this text are set forth in the following paragraphs.

For the purposes of economic analysis, the definition of capital has been considerably broadened. Economists usually have defined capital as "man-made producers goods" or words to that effect. The book under review defines capital synonymously with wealth, namely, "the stock of material economic goods" (pp. 46-49), and thus includes both land (natural resources) and consumers goods.

The significance of this broader definition becomes more apparent in the section on distribution. Instead of regarding rent as the income from land or from productive agents of fixed supply, rent is defined as "a price paid for the hire of physical capital" (p. 615). This rent concept has the advantage of coinciding much better with usage, *i.e.*, rent of dwellings, rent of tuxedos, etc. It likewise avoids the traditional difficulty of trying to decide just where land ends and capital begins in order to identify the income from assets that combine elements of both. Even so, these broader concepts of capital and rent do not preclude the use of the old Ricardian rent theory in extended form as an explanation of the return from capital goods that are relatively fixed in supply (pp. 616-23).

Another outcome of the wider definition of capital is the need for a slight reclassification of the factors of production. The usual land, labor, capital and business enterprise become land, labor, investment and business enterprise (p. 86).

In dealing with the highly controversial subject of interest a loanable funds theory is offered which integrates most of the other interest theories (Ch. 28). The demand for loanable funds is viewed as stemming from consumer bor-

[1] The reviewer suggests the following chapters or portions thereof as the basis for three semester hours of college credit in principles of economics: Ch. 1 through 6, 14 through 24, 26 through 30, and possibly 33 and 34.

rowers' time preference and from producer borrowers' estimates of the marginal productivity or efficiency of investment. (The authors have little use for the distinction between marginal productivity and marginal efficiency [p. 598].) Liquidity preference is deemed the major determinant of the supply of loanable funds. The equilibrium rate of interest is held not to be stable unless it should equate saving and investment as well as the demand for and supply of loanable funds. As a whole, this is a rather happy integration of the leading old and new ideas regarding the interest rate.

In the section on money, banking and the price level, the text follows conventional lines except that the neutral money proposal is favored as a solution for the problem of changing price levels (pp. 334-35). This proposal, of course, implies a gently falling price level. If confronted with a serious amount of unemployment, one wonders how tenaciously one could cling to the neutral money proposal despite its technical advantages. Certainly a gently rising price level or a stable price level is more conducive to business profits and full employment.

In the treatment of value and price, the traditional order is reversed by explaining pricing under conditions of monopoly, product differentiation and oligopoly prior to the case of pure competition (Ch. 22 and 23). Considering the point of view of the beginning student of economics, this rearrangement has much to commend it. In the actual world the non-purely competitive markets are far more common and the theories concerning them will seem less strange than the theory built around the more rigid and less frequently applicable assumptions of pure competition.

A strong and able case is made for welfare economics (especially Ch. 31, 32 and 39). Despite careful phraseology, this will give the book a tinge of leftishness in the minds of some. On the other hand, the authors take a conservative attitude toward deficit spending (pp. 948-50) and are far from unconcerned about the size of the public debt (pp. 939-40). These viewpoints on welfare and fiscal policy are balanced and laudable, though in the event of depression they may prove to be not entirely reconcilable.

In the concluding chapters on comparative economic systems a distinction is drawn between capitalism and liberalism. This is one of the signs of the times in economic thinking. Three decades ago capitalism and liberalism were closely identified with each other.

Throughout the text economic fallacies, popular and otherwise, are forcefully dispelled. Readers familiar with other books of Professors Bye and Hewett will recognize this feature as one of their professional trademarks. Only two of the exposed fallacies will be mentioned here. First, the old "lump of labor" fallacy is carefully distinguished from the use of fiscal policy for the relief of unemployment (pp. 380-83). Second, the idea that an increase in the supply of money will lower the interest rate is shown to be only a temporary expedient (pp. 598-99).

The Economic Process offers many contributions as a college text on economic principles and problems.

PHILIP G. HUDSON

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Economics. By Bruce W. Knight and L. Gregory Hines. (New York: Alfred A. Knopf. 1952. Pp. xvii, 917. $5.75.)

This new text is a large volume of 917 pages, separated into eight major divisions. These include the Introduction; Framework of the Economy; National Income as a Whole; Individual Outputs and Prices; Functional Distribution; Selected Problems; International Economics; and Socialism and War Economics. The sections range in length from 73 to 167 pages.

There is no attempt to unify all parts of the book under one approach whether "psychological," "institutional," "monopolistic competition," "Keynesian," or "national income." In the words of the authors, "No approach should become an iron bed to which the more persistent problems of modern economics are fitted by stretching some and lopping off others. . . . We have tried to allocate our writing with due respect to the comparative values of alternates. Furthermore, we proceed on the assumption that the almost exclusive use of any one approach is not adequate to the presentation of any broad problem or policy." The aggregate approach is given strong emphasis in the chapters dealing with the level of employment and output. Where the subject is general economic organization, institutions and their development are stressed. The classical and neo-classical approach is used in dealing with competition, prices, value, and distribution.

In choosing between emphasis upon theory and facts, the book begins with subjects which present a compromise between principles and information. This necessitates the occasional mention of terms and principles which are not clearly explained at that point and are more fully explained in subsequent sections of the book. For example, in Chapter 2, such topics as the creation and destruction of purchasing power, dishoarding, and inflation are briefly mentioned and explained in later chapters. This device is justified by saying, "Discipline is progressively emphasized by the cumulative enlargement of topics and some repetition is employed deliberately as a part of this building process."

The book is readable and teachable both because of the style and the interesting incidents used in illustrating abstract principles. Currently accepted fallacies are discussed, and their weakness pointed out. Charts are kept to a minimum. Each chapter ends with a summary of the important points. As an aid to developing student thought and analysis, a group of excellent problems are placed at the end of each chapter.

Emphasis between economic theory and issues of current problems is relatively equal. The chapters dealing with individual outputs and distribution are clearly presented. National income and its relation to employment, business cycles, and economic stabilization are with few exceptions explained in terms that can be understood by beginning students.

The authors are interested in current issues of public policy and the solution of economic problems. As a rule, the essentials of a problem are analyzed, suggested solutions are examined carefully and weighed. The treatment is impartial; there is no tendency to favor labor or capital. Indeed, in the chapter on labor, after a thoughtful analysis of the conditions under which labor organizations are not socially justified, the need for labor organizations is shown

by quoting the "Mohawk Valley Formula" suggested for use by management in defeating strikes. In general, after a careful analysis, the student is left to weigh the facts and arguments and to come to his own conclusion. Only occasionally do the authors present their own solution as in the case of their Proposal for the Gradual Socialization of Rent.

One question will occur to the reader: While the text is intended for a year's course, is the book intended for those students who do not plan to take subsequent courses in economics and business administration, such as majors in liberal arts and various professional colleges? The reason for this question is the fact that certain chapters of the book emphasize in considerable detail material which is the basis of advanced courses elected by students in economics and business administration. In view of this fact, the book would seem to be best suited to students not planning to major in economics.

E. J. Brown

University of Arizona

An Introduction to Modern Economics. By Leland R. Robinson, John F. Adams, and Harry L. Dillin, editors. (New York: The Dryden Press. 1952. Pp. xviii, 942. $5.75.)

Selected Readings in Modern Economics. By Asher Isaacs, C. W. McKee, and R. E. Slesinger, editors. (New York: The Dryden Press. 1952. Pp. xviii, 700. $3.25.)

Student Workbook in Modern Economics. By Asher Isaacs, R. E. Slesinger, C. W. McKee, and W. C. Bradford. (New York: The Dryden Press. 1952. Pp. xii, 332. $2.50.)

An Introduction to Modern Economics is an edited work and represents the combined efforts of 34 people in addition to the editors-in-chief. The chapters were originally written by 31 authors, each of whom was assigned a specific subject within a general category. The problem of supervising the preparation of material for each section was handled by some 15 section-editors. As a last step, the editors-in-chief worked over the entire manuscript and rewrote much of the material in order to obtain a "consistent textbook presentation." The manuscript was then tested in lithograph form in a number of colleges and universities for two years prior to publication.

The book is divided into eleven major parts which appear in the following order and contain the indicated number of pages: An Introduction to Economic Theory and Economic Institutions (67), Production (103), Money and Banking (99), Value and Price (127), Distribution (71), National Income Analysis (93), Economics of International Relationships (67), Some Special Problems of a Modern Political Economy (87), Problems of Insecurity (73), The Role of Government in Economics (93), and Comparative Economic Systems (61). In the introductory section, the authors introduce the student to macroeconomics by presenting a brief discussion of gross national product and national income. This, of course, has the advantage of giving the students an over-all picture at the outset and probably acts to stimulate their interest in economics more than if the initial emphasis were placed on microanalysis.

Although the book has only two chapters, covering some 45 pages, devoted

to national income proper, this figure is rather misleading since the macro-approach receives attention in several places throughout the book. Land, labor, and business organization are discussed in the section on "Production." The chapter here on labor unions is particularly well done and covers most of the salient material in a fashion that should hold student interest. The treatment of "Money and Banking" was somewhat disappointing to this reviewer. While the historical and descriptive aspects are adequately covered, it is doubtful if a student can really understand the place of banking in our system without in effect being taken by the hand and led through the development of a commercial bank from its inception to full growth. This the authors fail to do; furthermore, the difficult problem of explaining how far the expansion of loans and discounts can go if a 20 per cent ratio is required, is allotted only one short paragraph. In discussing the Federal Reserve System, 15 pages are given to organizational description whereas only 12 pages are used to cover Federal Reserve policies and the effect of the System on member banks.

The section on "Value and Price" is the longest in the book and gives the student a comprehensive picture of microanalysis. The authors have made liberal use of simple diagrams showing demand, supply, and cost curves. While some "crooked" curves are presented, most of them are of the typically continuous variety. In light of the controversy pertaining to the shape of the marginal cost curve, it is a little discouraging to find it depicted as being almost "U" shaped. It is also surprising to find a book which makes use of a number of diagrams presenting none for the important area of oligopoly. This reviewer would like to have seen more attention given to the limitations of marginal analysis, particularly the controversy of recent years over the empirical validity of the "profit maximization" assumption.

In the section on "Some Special Problems of a Modern Political Economy," chapters are given to agricultural economics, public utilities, and transportation. There is also a chapter covering the economics of defense mobilization in which, incidentally, less than a page is given to price and wage stabilization. Chapters on risk, insurance, and social security make up the section on "Problems of Insecurity." The next to last chapter of the book, "Capitalism, An Evaluation," does an excellent job of evaluating private capitalism in both a realistic and positive manner. It seems unfortunate that more space was not given in the rest of the book to some of the points raised in this chapter.

Those who like a book which is broad in coverage, gives considerable historical background for most of the topics covered, raises significant controversial questions and takes a fairly balanced position on them, has a generally adequate treatment of microeconomics accompanied by a liberal use of graphics, and which does not neglect macroeconomics should examine this book carefully. It is, of course, not possible within the covers of any one book to compile a product which will satisfy all teachers of economics. The decision of the authors to cover a wide variety of topics, to present considerable descriptive material, and on many occasions to include the views of classical and neo-classical economists, has been made at the expense of devoting less space to analytical material. Some teachers will like this, others will not. In-

cidentally, the index appears to do the authors a disservice in that it fails to list major items such as marginal productivity and comparative advantage which are covered in the text.

Having the student read something besides the textbook in the elementary course appears to be a fairly common practice.[1] There is, however, considerable difference of opinion among economists as to what type of outside material is most helpful. In *Selected Readings in Modern Economics,* the editors have brought together 157 reading selections. Most of the selections are short, average length being four pages, and almost all are excerpts from longer articles or books. *Selected Readings* follows the same organizational pattern as the above textbook, but there are outlines showing how it might be used with seven other elementary texts. The selections are taken from a wide variety of sources; however, most of them seem to come from various economics books with representation given to classical, neo-classical, and contemporary economists. Somewhat less than a third of the selections are taken from fairly contemporary non-book sources; *e.g.*, National City Bank Letter, government reports, *Federal Reserve Bulletin,* the Nathan Report, various management publications, and a few union constitutions. Based on the experiences of the reviewer, the non-book selections represent the type of material that is badly needed as a supplement for the elementary text. Such sources are more apt to stimulate student interest than will additional readings from the works of famous economists. After all, the students are just beginning in the field and can be expected to digest only so much professional economic writing in the course of a year. Far too many of the selections in the various reading collections which have appeared in the last few years give the student material that is basically more of what he is already getting in the textbooks. Since there are ample materials in popular magazines, newspapers, releases of the NAM, Chamber of Commerce, AFL, and CIO, to cite a few possibilities, which contain debatable economic reasoning, it is to be hoped that the editors of future readings will give them more consideration.

The *Student Workbook in Modern Economics* has been designed to accompany the above two books. It contains a sufficient variety of types of questions and projects to satisfy almost any teacher. There are factual review questions based on the text as well as some good oral discussion questions. In addition, there are exercises based on the *Readings* as well as some interesting projects and case studies. The *Workbook* closes with a valuable statistical supplement which covers some 45 pages and contains 57 tables.

A free *Teachers Manual* containing objective tests and answers to same is available. It also has suggested solutions to the projects and cases contained in the *Workbook.*

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[1] The Report of the Committee on the Teaching of Undergraduate Economics stated that two-thirds of the replying institutions used some type of collateral readings in their beginning course. *Am. Econ. Rev.*, Suppl., Pt. 2, Dec. 1950, XL, 53.

General Economics—An Introduction. By ALLEN M. SIEVERS. (New York: J. B. Lippincott Co. 1952. Pp. xi, 771.)

As the title indicates, this book is intended to be a college textbook in economics. Certain of the nontechnical chapters will be found interesting to the general reader.

The author states that economics has gone through three revolutions in the twentieth century and is undergoing the latest of these revolutions at the present time. This volume is the first to take cognizance of the present revolution at an introductory level. The three revolutions are identified as *institutional,* the *Keynesian,* and now the most far-reaching, the *integrative.*

The *institutional* revolution was influenced by sociology, history and law; it sought to reintroduce the human and social element which had been lost in abstract studies of market forces. While the *institutional* revolution achieved some success, it did not supplant the older form of economic analysis.

The *Keynesian* revolution came after the publication of the *General Theory* in 1936. There was a strong tendency for Keynesian materials to dominate all traditional materials to the extent that "Keynesian-oriented textbooks tended to become textbooks in Keynesianism." The author does not neglect the Keynesian contribution but places it "in its proper category as a new insight but not a final formulation of economics."

The approach to economics used by Professor Sievers is concerned with "synthesis, integration, and the making whole of the divided discipline of economics," which is called the new *integrative* approach. He admits indebtedness to Professor Karl Polanyi (to whom the book is dedicated) whose work, *The Great Transformation* (1944) provided the framework for this volume. The approach is admittedly a new kind of institutional approach which integrates and unites, rather than divides the disciplines of the social sciences. The Polanyian approach makes it possible to put "market capitalism into a perspective so that it may be seen in relation to all other economic systems, past and present." The author further claims that the "Polanyian institutional theory makes possible prediction and control on the truly long-run time scale during which economic systems rise and fall." It is Sievers' belief that we are living in a period of major transition—The Great Transformation —and more penetrating tools are needed which the Polanyian integrative institutional theory provides. This volume is therefore both *institutionally theoretical* (Polanyi sense) and *analytically* theoretical in the mathematical sense of the marginal school.

Reference is made to the six-year study of the American Economic Association Committee on Undergraduate Teaching of Economics (Supplement to the December 1950 issue of the *American Economic Review,* Vol. XL, No. 5) which dealt with the problems of teaching economics. It is the author's view that "the primary reason for writing this book is the belief that the Polanyian insights provide a solution to the dilemma or dilemmas which have long plagued the teaching of economics and which are discussed in this report." He claims to show integration and relation of every chapter to every other chapter with Polanyian institutionalism providing the unifying thread. In this he has succeeded.

The volume contains thirty-five chapters divided into four Books. The first Book, Part A, deals with the Machine and the Integrated World Economy. The author begins the first chapter with the automobile and shows how it has become an integral part of the economy. This permits the introduction of many institutional phases, technology, money and credit mechanisms, social effects and so on. The illustrations are familiar to students and should enlist a high degree of readers' interest from the start. Part B treats the Structure of the American Economy and deals with natural and human resources, financial institutions, business organization, the government as a producer and spender, with a final chapter on national income and national product. Part C, America and the World, is a comprehensive treatment of international trade, accounting, and finance.

Book Two, Social Organization, Economic Thought, and Institutional Systems, examines in Part A the institutional structure of society together with economic theories and social movements in the pre-Smithian era. Part B deals with the comparative economic systems of Capitalism, Sovietism, Fascism, and the post-war British Socialist government. The treatment of systems is comprehensive and objective.

Book Three, Economic Analysis, is (admittedly) the first time any economic analysis appears. Part A, Introduction, deals with method, objectives of economic analysis, and general economic terminology, axioms, premises, hypotheses on which subsequent chapters are built. Tools of analysis such as mathematics and statistics, the development of graphs, curves, margins, the equilibrium concept and the like, are meticulously developed and reduced to working tools which the student should be able to apply. Under Part B, Equilibrium Theory, are five chapters which contain the heart of the theoretical economics. Demand, supply, long- and short-run equilibrium under different market situations are treated with thoroughness both statistically and mathematically. Even though less than a hundred pages are devoted to economic analysis and equilibrium theory, the essentials are effectively presented. Part C, Theoretical Analysis and Policy, contains chapters on the Keynesian system, business cycles, monetary and fiscal policy. The emphasis here is both historical and institutional. While the Keynesian discussion might not be quantitatively adequate for some, it presents the essentials. The three chapters are integrated and emphasize the necessity of careful monetary-fiscal programs for control of business fluctuations.

Book Four is devoted to Contemporary Problems including welfare, farm problems, the labor movement, social security, waste, social control of business and finally a war-oriented economy. The concluding part and chapter deal with the future of Western Civilization in which the question of whether it will progress or regress is posed. A selected bibliography for each chapter is included.

The author has indeed presented a challenging array of materials. He has followed an institutional pattern although the book is not strictly a book on institutional economics. It holds together because of the success attained in integrating subject matter. Some might object to the amount of space devoted to value and distribution theory, while others might find similar objec-

tion to the national income analysis. The use of mathematics in Book Three, Economic Analysis, while not excessive, will be found by some to be fairly rigorous. The book is very readable and should prove teachable. The author set out to present an integrative approach to economics. In this reviewer's judgment, he has accomplished his purpose.

J. F. BELL

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The Economic System. By E. T. WEILER. (New York: Macmillan. 1952. Pp. xxx, 869. $5.75.)

Professor Weiler has written a good, though dull, elementary textbook. The author's unincisive exposition and predilection for largely redundant discussions (*e.g.*, previews, surveys, summaries, etc.) makes this reading a cheerless task. What makes the book worthy of attention, though, is the highly useful general equilibrium model of the economy Weiler develops. This model clearly discloses, with considerable originality on the author's part, the economic problems he chooses to discuss, and nicely shows how these problems could be solved.

Weiler's model has two sectors (firms maximizing profits and households maximizing utility), both obeying Say's Law in perfectly competitive markets with given resources—fully employed—and given technology. The model is graphically represented by a slightly modified version of the familiar circular flow diagram. The two sectors are disaggregated according to occupation instead of being represented as homogenous units as they usually are. Households are arranged along a continuous scale according to occupational grouping. Businesses are arranged along a similar continuous scale according to the type of product. The two sectors are connected by a flow of goods and services and a counterflow of money payments. The easily recognizable economic problems of the division of resources among different products, the allocation of factors among different productive units and the distribution of income are clearly shown to exist.

Part I introduces the model and discusses it in a very superficial manner. Apparently its only purpose is to prepare the reader for a more thorough examination of Part II.

Part II begins with a partial analysis of each side (demand and supply) of the two markets that exist in this model: the market for products and the market for productive services. Each business firm must locate on the product continuum—that is, choose a product to produce—produce that amount which will maximize profits and combine inputs in such a way that costs will be minimized. Weiler shows how this is done and briefly considers the reaction of firms to changes in data. Households, facing somewhat similar problems, are analyzed in a similar fashion. The markets are then connected and the effects in both markets of changes in parameters are considered. The result is a particular supply of productive services provided, and a bill of goods produced and consumed. Weiler asserts, along the way of the above argument, that the output produced will be ideal; however, he does not establish the conditions of the Paretian General Optimum of Production and Exchange, and his claim cannot be proven—just asserted.

Although Weiler's partial analysis is, in this reviewer's opinion, somewhat inferior to the usual elementary textbook performance, his general equilibrium analysis of a two-sector economy is an excellent job. This is simply because problems of resource allocation can be analyzed within his model and clear meanings given to such important economic concepts as price, cost, resource, market, etc. To some readers these appear to be very simple tasks, but to this reviewer's knowledge Weiler is the first author to deal successfully with them at the elementary level.

After a brief but superior analysis of the effects of taxation and government purchases on the allocation of resources, Weiler introduces the banking system into his model. With this Say's Law must be released and income changes considered. This is done within the equation of exchange, which he carefully distinguishes from the quantity theory of money, without so much as a mention of Keynes. Changes in aggregate equilibrium are discussed at length and the consequences of such changes are considered when prices are rigid and then flexible. Unfortunately, much of the argument is marred by Weiler's mistaken belief that income equilibrium will obtain when planned savings equals planned investment. This is neither a necessary nor sufficient condition for equilibrium since this equality is compatible with changes in income, and income need not change if planned savings and planned investment are not equal. A short but adequate appendix to Chapter 19 is devoted to the "less general" Keynesian System. Two chapters on international trade conclude this long Part II (17 chapters, 381 pages).

Part III is a one chapter discussion of national income aggregates and social accounting.

Part IV, titled "Economic Growth," is largely a discussion of several factors that could account for the difference in national income between 1950 and, say, 1860. Long chapters are devoted to the quantity and quality of human effort, the rate of technological progress, and the relation between the amount of capital equipment and the productivity of labor. This part ends with chapters on the relation between the price system, business cycles, and economic growth. The relations Weiler establishes between the variables he treats and the size of national income seem intuitively acceptable, but since a theory of economic growth is not developed, the usefulness of much of the author's argument will depend in part on the individual reader's intuition. This unsatisfactory state of affairs, though, is more a fault of economic theory than of the author.

Questions of economic policy are taken up, for the first time, in Part V. Weiler's refusal to mix policy and economic analysis in the earlier parts of the book will come as a relief to those economists who have grown weary of writers who would mix them in the belief that economic analysis has no valid existence apart from questions of policy. Weiler begins by asking the question, "What kind of economic system do we want?" It is clear from the statement of the question that Weiler recognizes that economic systems are objects of choice and that societies, as well as individuals, must choose between alternative courses of action. It would seem that in order to make the necessary social choice some sort of rule or process must be formulated to pass from individual orderings of alternative economic systems to a social ordering of

these systems. Unfortunately, Weiler omits this step and answers his question in quite an arbitrary fashion. The reader is told that the answer given comes mainly from J. M. Clark and not from the orderings of individuals. Now it is probably true that the problem of deriving a satisfactory social welfare function cannot be taken up in an elementary economics course but it still seems improper for an author to select arbitrarily one economic system and discuss it as if it were the proper system for society to achieve. It would seem more fitting had Weiler confined himself to the sufficiently difficult task of analyzing the probable effect upon certain important aggregates of alternative economic policies which could be used to achieve alternative economic systems, without undertaking to select the economic system to be achieved as well.

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Readings in Economics. Edited by P. A. Samuelson, R. L. Bishop, and J. R. Coleman. (New York: McGraw-Hill. 1952. Pp. xii, 484. $4.00; paper, $3.00.)

Readings in Economics is the latest in the growing collection of anthologies available to supplement the standard textbooks in elementary economics. The volume is organized into eight parts covering the broad topics generally included in an elementary course, beginning with concepts and the institutional framework and ending with selections on economic systems and economic philosophy. There are sixty-four selections and an appendix of eight economic charts. The selections have been organized into sections which correspond roughly to Samuelson's *Economics*. There is no reason, however, that the book should not be used in connection with any standard text or the selections read in an order quite different from the editors' arrangement. In general, the articles are well written, interesting, and well suited to students at the elementary level.

The number of selections is purposely somewhat smaller in this volume than in previous anthologies. The editors have avoided the temptation of including clever little tidbits which add little to the useful knowledge of the student. Rather, their selections are somewhat longer than those of similar volumes, and in most cases the result is something more meaningful and useful to the student. The price of increased length of particular selections, however, is some reduction in total coverage. On the many topics which it could be considered desirable to touch upon in an elementary course, this volume supplies fewer articles than do previous volumes.

In view of space limitations, selection of articles from the vast array of economic literature for inclusion in any such volume presents a formidable problem to the editors. A case can be made for the inclusion of this article, the exclusion of that article, or for substitutions. Evaluation of the articles finally included will vary in accordance with personal predilections and the nature of particular course offerings. This volume appears to be a good compromise and should be a useful reference work at the elementary level.

The volume contains such gems from the classics as Malthus on population, Mill on the functions of government, Ricardo and George on rent,

Adam Smith on free trade, and Schumpeter on "creative destruction." One ingenious selection is the "Petition of the Candle Makers—1951" which appears immediately following Bastiat's famous "Petition of the Candle Makers—1845." The bulk of the volume, however, consists of current and topical articles drawn from journals, periodicals, and government documents.

The editors have made special effort to include articles which present "viewpoints that sometimes receive less emphasis in the academic classroom," *i.e.*, the National Association of Manufacturers, the Chamber of Commerce, statements by spokesmen of particular industry or labor groups. For my personal taste I would prefer a little less of special and particularized viewpoints and further selections to drive home the results of academic inquiry as it concerns the economy as a whole. Exposure of the beginning student to the narrow (and occasionally erroneous) treatment of economic problems by persons with special interests in mind does not ordinarily assure that the product of Economics 1 will be a student with well-rounded views. On the contrary, it often serves only to confirm preconceptions and prior judgments and to minimize the acceptance of ideas less familiar but equally important and perhaps more intellectually honest.

The editors' emphasis has resulted in a one-sided presentation of the problems of monopoly-competition, antitrust, and "bigness." This portion of the book (Industrial Organization and Pricing) is, I feel, the weakest. The selection on the nature and history of antitrust policy is so concentrated and dehydrated as to be meaningless to anyone not already conversant with the subject. I miss Henry Simons on monopoly and also on monetary-fiscal policy.

In sharp contrast, however, are such articles as the clear and concise Pigou treatment of the "Economics of War." All of the material on the economics of defense, mobilization, inflation, and controls is excellent. The portion devoted to distribution of income is adequate but unimaginative. The section on economic systems and philosophy is especially good. It contains, among other things, the *Communist Manifesto,* some excellent Pigou, Keynes' classic Chapter 24 from the *General Theory,* and comments on the economic system by religious leaders.

I find that the volume provides very good supplementary reading material, generally well edited, and presented in good form. It will not solve all problems of assigned reading, but it will help.

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Economic History; National Economies

Histoire du Commerce. Edited by JACQUES LACOUR-GAYET. Vol. I: *La Terre et les Hommes;* Vol. II: *Le Commerce de l'Ancien Monde jusqu'à la Fin du XVe Siècle.* (Paris: Editions SPID. 1950. Pp. xxiii, 377; and 360. Fr. 1200 per volume.)

This review deals with the first two volumes of a general history of com-

merce, which is to be completed in five volumes. Of the two volumes which are ready, the first contains a general account of commercial geography, the social rôle of merchants and the types of commercial institutions. The second volume is a history of trade in the western world from its beginnings in antiquity to the end of the middle ages. The remaining volumes will bring the history of trade up to the present, and will take up also the discussion of commerce among non-western peoples.

If the remainder of the set is up to the excellence of the two volumes published so far, it will be a worthy successor, on a more limited scale, to such great historical compilations as the French have produced in the past in the collections *Peuples et Civilizations,* published under the editorship of H. Halphen and P. Sagnac, or *L'Évolution de l'Humanité,* published under the general direction of Henri Berr. Another comparison which suggests itself is with the *Cambridge Economic History.* This work is both more detailed and deals with a broader set of topics than the volumes under review. The *Histoire du Commerce* is, moreover, intended chiefly for the interested layman or the student of general history, and the major effort made by the contributors to the work is not to push further the frontiers of knowledge in the field of commercial history, nor even to enter into an evaluation of different views on certain phases of this history as expounded by various authors, but rather to give an informed and well-balanced summary of what purports to be generally accepted opinion and knowledge in the field. Hence the usefulness of the two volumes under review for the scholar is somewhat limited, and the specialist in economic history, or particularly the history of trade, will hardly find anything in them which is new to him. He will especially miss the discussion of controversial, as yet unsolved, issues, and although the special bibliographical footnotes appended to the several chapters, as well as the general bibliography at the end of Volume I, are not without merit, they are neither complete nor free from error.

And yet, the over-all impression that even the expert in the field of economic history is likely to get after reading the work is one of satisfaction. In part this is due to the display of a real economy of words. A tremendous mass of information is packed into the two volumes of a little over 350 pages each. All the really important issues and events are touched upon, and the manner of presentation is throughout plastic and vivid and in some places truly delightful. For example, the description of the rôle and operations of small retail traders throughout the ages (pp. 163 ff., Vol. I), or the sketch of the major changes in trade patterns between the fifth and the fifteenth century (pp. 189-93, Vol. II) are passages which not only convey clearly and precisely the relationships under examination, but exhibit fluent French prose at its best and most expressive.

The economy and clarity of exposition are matched by the nice sense of proportion exhibited by the contributors and the balance displayed by the various parts of the work. The examples chosen are usually sufficient to illuminate a point clearly, and never appear to be heaped on in a mass so as to become boring. Even a subject, which on the surface might appear as dull, such as the description of the various forms of retailing under modern mass-

production methods, is treated in a lively fashion, and the various types of retail distribution, by chain store, mail order house, department store, and others, are surveyed with a realism which makes them come to life for persons not, or only very little, familiar with these forms of retailing, and, at the same time, are not uninteresting to those who have daily contact with such institutions.

A similar balance is exhibited in the more strictly historical accounts. For example, the often obscure phases of declining trade during the days of the decomposition of the Western Roman empire, are laid bare with a fine feeling for what is pertinent, and the equally complex history of the reconstruction of trade in the West from the eleventh century on is dissected in a lucid and systematic fashion. The parts played by Byzantines, Venetians, Genoese, Pisans, Provençals, Arabs, Normans, Jews, and Syrians, and later by the German, Frisian, and Flemish traders and hanses are carefully described; and the intercourse between the various groups, the networks of trade in the Mediterranean and the Baltic-North Sea area, as well as the function of the connecting centers between the two networks, the fairs of Champagne and the cities along the Rhine and in the valleys just north of the Alps, are subjected to precise and well-fitting analysis. As a result, the reader is led to understand not merely why such medieval centers as Venice, Genoa, Cologne, Hamburg, Bruges, and others, were prosperous, flourishing towns, but he also recognizes how the combined impact of commercial and economic activity, on the one hand, and political fortunes, on the other, led, in the twelfth and thirteenth centuries, to the concentration of economic activity on a high level in three or four centers—Northern Italy, the Low Countries, the sheltered river mouths along the Baltic and the North Sea—and why, almost inexorably, a gradual dislocation took place away from these centers towards Southern Germany, the valleys of the Seine and the Rhine, the main ports along the English Channel and the Danish Sound, and in Italy towards the cities located farther away from the coast—Florence, Milan, Rome, Bologna. He sees finally, how the endpoint of the history of medieval commerce is reached in the discovery of the New World, and how, from now on, the Atlantic Ocean becomes the main highway for overseas trade, thus finally displacing the Mediterranean from a position it had maintained, with only short and relatively insignificant interruptions, for over two millennia.

This is the sweep conveyed by the second volume, the contributors to which are Maxime Lemosse, who carries the story up to the interruption of the western Mediterranean trading system by the Arabs in the seventh century, and Marguerite Boulet, who deals with medieval trade. This last section on medieval trade is not only distinguished by the very skillful handling of the historical material, but also by the courage of the author in presenting hypotheses where certain knowledge is as yet absent, notably in her account of the reawakening of commerce in the West during the eighth and ninth centuries. She follows, on the whole, in the footsteps of good and secure authorities; her mentor through this as yet relatively little explored field is Henri Pirenne. The summary she provides is, however, not a slavish reiteration of Pirenne's hypotheses on the origin of trade in western and north-

western Europe, but incorporates some of the critical comment levied against Pirenne by men such as Dopsch and others.

Professor Lemosse, on the whole, remains in the realm of what is known with a fair degree of certainty, and hence devotes only relatively little space to the origins and early stages of commerce. It would have been desirable if more space had been given in his account to Greek trade in the pre-Hellenistic period, especially the mixed enterprises of piracy, colonization, and commercial activities among the Greeks of the Western Mediterranean. Hardly any attention is given to the rôle of Minoan Crete, and several of the politically less important peoples—Lydians, Hittites, Assyrians—are given only very cursory treatment. Even the Persians are much neglected. Compared with the relative paucity of descriptions and analysis of pre-Hellenistic commerce in antiquity, the sections on commercial policy and relations after the death of Alexander the Great and under the Roman Empire are adequate and in parts quite excellent.

The three main contributors to Volume I are André Journaux who writes on commercial geography, Pierre Bernaerts, who writes on the social status of the trader, and Michel David who writes on commercial institutions. M. Journaux presents in some 130 pages a good account of commercial geography with particular relevance for the present. It would have been desirable, in a work on the history of commerce, if more attention had been given to some of the changing aspects of geographical conditions owing to changes in trading centers and trade routes, the commodities traded, and the means of transport. The network of commercial relations, overland and across the seas, in a modern setting, is well described, at times even in such detail as to include a listing of the tonnage of the major passenger vessels plying the Atlantic Ocean, or the main types of passenger planes, or the passenger miles flown by the world's five or six largest air carriers. At the same time, no attention is paid to such questions as what geographical conditions favored the development of such centers as Alexandria, Antioch, or Carthage, what geographical conditions determined the main caravan routes in antiquity between the Syrian coast and the uplands of Iran or Arabia Deserta, what types of changes in the system of rivers and canals in the Low Countries took place as a consequence or condition of the gradual shift of the commercial center from Bruges and Ypres to Antwerp, and further to Amsterdam.

Next to Mlle. Boulet's contribution on medieval commerce in Volume II, Dr. Bernaerts' account of the social rôle of the trader is the most outstanding section in the two volumes before us. This may, in part, be due to the intrinsic interest the discussion of the social position and function of merchants has for economists and economic historians. But it is in part doubtless due also to the freshness of the views expressed by Dr. Bernaerts. His main proposition on the social background of traders is that they come from all classes and that no social group is specially favored as a source for the recruitment of trading people. He admits that, in a society in which exchange is little developed and only sporadic, the so-called "marketless economies," the limited trade which does take place is usually carried on by foreigners. For example, in the late Merovingian or early Carolingian period in the Frankish empire,

trade was exclusively in the hands of Syrians, Greeks, and Jews. Once a domestic group of traders develops, however, the monopoly of the foreigners is broken and individuals from the lowest as well as the highest ranks of society tend to enter trading activities.

Without wishing to contest any of the facts cited by Dr. Bernaerts, his analysis appears insufficient. Granted that traders throughout the ages have come from all social classes, is that all we can say about their recruitment? Can we discern particular factors in the social structure, or the value system, of a society, which would favor the movement of some members of this society from certain social layers into trading occupations of certain kinds, as compared with others? Has the opportunity to embrace a career in commerce been the same for people of different social background under all cultural and social structural conditions, or can we indicate certain specific relationships which tend to vary with changes in the social composition of a group, and which exert an influence upon the selection of persons who do and who do not engage professionally in exchange operations? Is the meaning of retail trade the same on different levels of economic advancement, and what influence, if any, does this difference have on the social composition of retailers in different societies? These and other similar queries come to mind when one reads the account of Dr. Bernaerts. And although he does not answer them, and perhaps does not even see some of them, his essay contains strong hints in several places that the simple statement that traders come from all social classes could and should be restated in more sophisticated and refined form, and that due account must be taken of differences not only in the level of economic advancement of a society, but also in the cultural values and norms of a population, which affect the process of recruitment of the merchant class.

The last essay in Volume I by Dr. David is, as already pointed out, lively and thus overcomes the intrinsic dullness of its topic, the discussion of commercial institutions. The different forms of retail and wholesale trade are discussed, agency and other forms of commercial intermediaries, as well as cooperatives and state trading enterprises are dealt with. Yet, the essay leaves the impression of being unfinished. It would have been desirable to include in it also certain legal relationships which are significant for trade. For example, the problem of insurance is almost completely neglected, and no mention is made of different types of commercial paper (warrants, etc.) which perform such an important function in trade. Also, among forms of retail trade under present-day conditions, installment selling is grossly neglected. These lacunae should probably not be laid at the door of Dr. David, since his assignment, according to the title of his essay, was to deal with the evolution of trading institutions ("*formes d'exploitation commerciale*"), rather than the legal and institutional framework within which commerce developed, and the legal and other instruments created for its use. But for the sake of completeness, it would have been desirable to have a short section on the historical development of accounting, insurance, and different kinds of commercial paper, and their rôle and function at different stages in the evolution of trade.

This demand may perhaps be too perfectionist, and M. Jacques Lacour-Gayet, the editor, and the authors of the two volumes might reply that they

have given us enough material in the work before us. Their claim would, doubtless, be justified, and one may look forward with eagerness to the remaining three volumes of this set which has been initiated in such a successful manner.

BERT F. HOSELITZ

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De Financiële Ontwikkeling van Nederland. By H. RIEMENS (Amsterdam: N. V. Noord-Hollandsche Uitgevers Maatschappij. 1949. Pp. 199.)

In this slim volume, Dr. H. Riemens presents an admirable short and succinct survey of the development and demise of the Netherlands as a leading creditor nation. As such, the book provides a precise historical perspective for an understanding of the difficult financial problems that the country has faced since the end of the war. Riemens brings to his task a rich background as an author and as a distinguished practitioner in the field of finance. He functioned for a number of years as *financiële raad* to the Netherlands embassies in Washington and in London, and served as a member of the Netherlands delegation at the Bretton Woods Conference. He is the author of an earlier scholarly study, *Het Amortisatie-Syndicaat, een Studie over de Staatsfinanciën onder Willem I.*

This attractive and well-written book fills a gap in Netherlands literature on finance. While this literature abounds in monographic studies on specific aspects or phases of the country's financial history, to the knowledge of this reviewer Riemens' work is the first complete study on the subject. The book comprises a brief introduction and eight chapters, including some general concluding observations.

Chapters 1 to 3—"Rise of the Netherlands Capital Market"; "Greatness and Decline in the Years 1600-1814"; and "Hundred Years Peace: 1814-1914"—covering the period for which there is a dearth of information on the payments balance and financial matters—are mainly factual and chronological. Also, the author has relied on general histories for his facts and not on economic historians! After tracing the beginnings of the Netherlands capital market and the country's pioneering in the creation of public credit (pp. 10-11), Riemens discusses the factors that contributed to the evolution of Amsterdam as the financial center of the world in the 17th century when "Countries in the process of development and countries in financial straits turned to Amsterdam for new capital" (p. 41). He suggests that the decisive factor probably was the Netherlands' anti-mercantilist policy opposing the accumulation of gold as a war chest and permitting the free outflow of gold (pp. 28-29) as foreign government loans and as investment in European and overseas ventures (pp. 32-42). Amsterdam's supremacy ended with the French occupation of the country during the Napoleonic Wars and the subsequent emergence of London as the international capital market *par excellence,* attracting to itself the former business of Amsterdam (p. 55).

However, the Netherlands recovered rapidly from these catastrophic events by developing its East Indies (Indonesia) colonies. A steady net inflow of

foreign exchange from the sale of the colonial products resulted in an increase in the wealth and income of the Netherlands (pp. 56-57), leading in the 1840's to the revival of Amsterdam, with the United States as one of its principal customers (pp. 59-69). Through a careful analysis of Netherlands trade statistics and "invisibles" for the period, the author shows that after 1870 the net income from and the return of capital invested in the East Indies in the years 1814-1870 by far exceeded the new investments there (p. 57). The extraordinary returns (*i.e.*, profits, dividends, interest, etc.) not only provided substantial sums for colonial reinvestment but also surplus capital for investment in the United States and in other areas.[1]

Chapter 4, "From World War to World War: 1914-1940," comprising more than one-third of the text, is a thorough statistical analysis of the financial development of the Netherlands during and after the First World War against the background of the economic changes in the world, especially of the prosperity and crisis in the United States. This probably is the best treatment of a complex subject available anywhere. Riemens here makes use of balance-of-payments statistics (first worked up under the auspices of the League of Nations) and other financial data. He surveys the financial reconstruction measures after the war; he discusses the conflict over the return to the gold standard and the financial policy of the H. Colijn and G. Vissering cabinets, and considers the prolonged depression of the 'thirties and the flight of capital because of threat of a new war.

Neutral Netherlands emerged from World War I in a weakened financial position, with a depreciated currency, an unfavorable payments balance and with heavy losses of investments in Russia, Germany and Austria (p. 76). The Netherlands government for the first time had to borrow—the irony of history—in the newly rising American capital market. Also, because of the high interest rates in the Netherlands, the East Indies had to borrow in the United States (p. 87). But with the spread of world prosperity, the Netherlands payments balance improved after 1923. This facilitated a return to the gold standard at the old parity in April 1925. The author shows that—in contrast to Great Britain which suffered disastrously from a similar policy—this was justified and successful (pp. 96-97). In fact, the Netherlands remained on the gold standard till September 27, 1936, long after it had been abandoned by the United Kingdom and the United States. Only the advent of the world crisis made it difficult for the country to continue to develop "as an island of great prosperity in the midst of an impoverished Europe" (p. 96)! During the interwar period Amsterdam again was among the capital markets, albeit one of second rank. The East Indies again provided—in prosperity and depression—the net surplus capital for Netherlands participation in foreign loan issues and direct investment abroad (p. 114).

Chapter 5, "The Netherlands Occupied," is a remarkably objective description of Germany's techniques and methods of economic exploitation of

[1] An exhaustive study of this subject is K. D. Bosch, *Nederlandse Beleggingen in de Verenigde Staten* (Amsterdam, 1948). See my review in *Annals Am. Acad. Pol. Soc. Sci.*, Sept. 1950, pp. 192-94.

the Netherlands during World War II occupation. Chapter 6 discusses the "Measures of the [Netherlands] Government in London" to protect the country's interests during the war, to finance its participation in the struggle, and to rehabilitate its economy after liberation. The study concludes with an analysis of the "International Reconstruction Measures" in Chapter 7. World War II, the German occupation and the loss of Indonesia have utterly broken the country's financial power. Only at the cost of considerable disinvestment in the United States and through Marshall Plan assistance was complete disintegration of the country prevented. Whether the Netherlands capital market can again be revitalized remains, to say the least, problematical.

De Financiële Ontwikkeling van Nederland is a welcome enrichment of the Netherlands' economic and financial literature. It should be of interest not only to those concerned with Netherlands affairs but also to students of European economic history.

Arthur Leon Horniker

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The Economic Development of Poland, 1919-1950. By J. Taylor. (Ithaca, New York: Cornell University Press. 1952. Pp. xiv, 222.)

The purpose of this book is to acquaint the reader with "the economic affairs of a not sufficiently known eastern European country which was confused in its economics, in its politics, and in those moral values which should always provide the foundations of policy" (p. viii). Had the author confined himself to this task, he could have made a valuable contribution to the growing literature about the underdeveloped countries. He has gathered a large amount of, sometimes, very interesting material. But he has overshot his mark, and the result is a treatise in defense of the pre-war Polish regime, apparently designed to clear it of all responsibility for the appalling economic conditions which prevailed in that country. (Most of the book deals with the inter-war period; only forty pages are devoted to a furtive discussion of post-war developments.) Everybody, from the United States to Hitler and Stalin, is blamed for Poland's sorry plight, except the Poles themselves; but more than anybody else—the Jews (p. 32). Curiously enough for an otherwise well documented book, the figures quoted in support of this view (p. 103) are given without reference, the author begging us to take them "on trust" (p. ix). The officially proclaimed course of action of the Polish government aiming at the economic destruction of the Polish Jews is brushed aside under the name of "some restrictive policies" which the author is ready to admit "led to the charge of antisemitism" but were, after all, only well intentioned methods "of making the best of an unfortunate historical legacy" (p. 104). With reference to the "vast movements of population" that took place in Poland during World War II, the author decries bitterly the forced evacuation of a million Poles into Russia (p. 156), but has not a word to say of the three million Polish Jews driven from their homes into Hitler's extermination camps.

The rest of the book does little to enhance its value. The author dwells at great length on the financial problems of pre-war Poland, especially the

stubborn and costly maintenance of an overvalued currency. He calls this "the major mistake in Polish economic policy over the whole period from 1919 to 1939" (p. 130) and holds it greatly responsible for the severe unemployment, for handicapping the export industries, and for retarding economic recovery (pp. 43-44, 120, 146). Yet he asserts that the government could not afford to devalue the zloty because of the people's "painful memories of inflation" (p. 43). And to emphazise the point, he repeats this argument time and again in almost identical words (pp. 50, 144, 145). On the other hand, he admits that Poland's neighbors had inflations of a much more severe kind (p. 116). If so, did they suffer from bad memory? Or was the better memory of the Poles responsible for the depression lasting two years longer there than in the rest of Europe?

Pre-war Poland appears to the author as a shining model of a mixed economy, "part socialist, part private enterprise" (p. 207), and he puts the semi-fascist Polish police state on a par with the British democracy (p. 35). Poland's arrogant and corrupt bureaucracy which succeeded in all but killing what little private initiative there was, is to him "the leading example of national economic planning (with) the maximum private incentive allowed within the overriding claims of the national interests" *(loc. cit.)*. And all this simply because the statistics show that the Polish government owned a number of industrial and commercial enterprises (many of which, incidentally, were only kept alive by generous government subsidies).

Opinions such as these make it difficult to take the author seriously. It seems that he has fallen a victim of his own credulity and his love for everything Polish. He has, for example, equal praise for both the pre-war and present Polish regimes, although he claims to "disapprove morally" of the latter. His story reads as though it had been taken from the pages of pre-war Polish government publications. Actually, he does acknowledge the help and advice given him by some members of the old government clique (p. ix). If this is where his wisdom comes from, then, of course, *sapienti sat.*

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Statistics and Econometrics

Econometrics. By GERHARD TINTNER. (New York: John Wiley. London: Chapman & Hall. 1952. Pp. xiii, 370. $5.75.)

By "econometrics" Professor Tintner means the measurement of economic relationships. In his own words, "It consists in the application of modern statistical procedures to theoretical models, which have been formulated in mathematical terms" (p. vii). He distinguishes it from mathematical economics, which "formulates economic theory in mathematical terms and uses the methods of mathematics to derive economic relationships from certain basic assumptions . . ." (p. 4), and from statistical economics, which "declines the

use of economic theory and claims to present a statistical summary of the economic data themselves" (p. 12). Tintner also distinguishes econometrics from statistics *simpliciter*, since statistics is concerned with the derivation of frequency distributions while this book justifies its statistical techniques by modifications of the least squares argument without going into sampling characteristics. The primary purpose of Part I of the book is to develop this concept of econometrics and to show, largely by means of examples, its scope, objectives and accomplishments. Exposition of the techniques of econometrics is deferred until Part II, which treats techniques which abstract from the time dimension of economic life, and Part III, which deals with time series analysis.

Part I is a survey of modern empirical research into the functional relationships of economic theory. It uses the case-study method to explain what econometrics tries to do and its underlying philosophy. The illustrations relate to demand functions (Shultz, Whitman, Roos and von Szeliski), supply functions (Schultz and Tintner), cost functions (Dean and Yntema), production functions (Cobb-Douglas and Tintner), utility functions (Waugh, Allen and Bowley). There is a brief statement of Leontief's input-output technique for representing relationships among industries. Numerical economic models, both static and dynamic, are exemplified by the work of Haavelmo, Tinbergen and Klein.

This variety of illustrations stakes out the field and aspirations of econometrics. Tintner's approach to each illustration is the same. He first states the problem, the basic assumptions, and the nature of the data employed. These considerations lead at once to the form of the economic equation which is desired. Then Tintner presents the final equation, complete with numerical coefficients, as derived by the investigator. Finally, there is a brief interpretation and evaluation of the result. The evaluations, which are a part of each illustration, add up to an evaluation of the attainments of econometrics thus far. Tintner feels that econometric research to date has been frequently suggestive but always inconclusive. He remarks that each of the illustrations is based on an over-simplified economic model and on unrealistic statistical assumptions. Consequently the results can be only tentative.

Parts II and III present a collection of the most important statistical methods used in econometrics. They presuppose a fairly good statistical background, which permits disposing of classical least squares in six pages and of partial correlation in half a page. The discussion of methods for estimating economic relationships is organized on a clear and instructive principle. Two cases are distinguished. The first is the case in which an exact formula connects the "true" values of the economic variables, so that the scatter observed in empirical work is to be imputed to the fact that observed economic data are only imprecise estimates of the "true" values. If only one variable, the "dependent" one, is subject to errors of observation, this case gives rise to classical multiple regression. If errors of observation affect several of the variables, "weighted regression" methods must be used. Tintner gives one such method, developed by Koopmans and himself.

The other case is that of stochastic variation. Here the model assumes that the economic variables can be observed accurately, but that the relationship (or relationships) connecting them is inexact either because the equation does not include all the relevant influences or because it is inherently subject to random variation. In the simplest case of only one economic relationship this also reduces to the classical method of least squares. In more complicated models, where the variables are connected by several equations, the Cowles Commission methods of analyzing simultaneous stochastic models come into play. In this connection Tintner gives a clear exposition of the concept of "identification" and of the limited information method of estimation.

In addition to these standard tools of econometric analysis, Tintner suggests a number of special purpose tools which have been applied only infrequently in econometric work. From the arsenal of psychological statistics he borrows the techniques of discriminant analysis, principal components, and canonical correlation. Of these, principal components appears to have the greatest promise for use in economics. This technique applies to the case in which there is a single dependent variable and a number of independent variables, all correlated with each other. It assumes that the correlations among the independent variables result from the fact that the independent variables actually depend upon some more fundamental unobserved variables which are not intercorrelated and each of which influences several of the observed variables. The method searches for these underlying variables, which are expressed as linear combinations of the observed independent variables. These underlying variables have zero correlations with each other and one of them, the one with the highest correlation with the dependent variable, is the "principal component." If the principal component explains essentially all the variation in the dependent variable, then it seems reasonable to believe that the variation in the dependent variable (for example, aggregate production) is due to a single economic cause, namely, the one detected by the principal component. Subsidiary components may also be computed, to obtain a count of the number of independent (*i.e.*, mutually uncorrelated) causes which influence the dependent variable. Each of the techniques taken from psychological statistics is explained clearly, though succinctly, and illustrated by the results of recent economic research.

In Part III Tintner grapples with the refractory problems of time series analysis. He gives a cursory treatment of fitting polynomial trends by orthogonal polynomials, but feels that the method requires unreasonable assumptions about the nature of long-run economic forces. He prefers a flexible moving-average method, in which the length of the average varies with the length of the business cycle. Some attention is given to logistic trends and to a non-parametric test for the existence of trend, based on rank-correlation.

Tintner discusses the measurement of seasonal and cyclical variation by outlining the method of Fourier analysis, useful when the length of the period is known, and by surveying, very briefly, several methods of periodogram analysis, useful when the length of the cycle is not known. He also describes a flexible method for eliminating season variation, due to A. Wald.

The details of this method are not available in English, and Tintner does not give enough information to permit the reader to judge the advisability of using it in any particular problem. None of the more familiar methods of seasonal and cyclical analysis is discussed.

There is an extensive discussion of economic models involving linear difference equations, that is, models which include linear relationships among a number of economic magnitudes observed at different dates. The treatment is based largely on the work of H. Wold, but the results of some more recent researches into autogression are also described. Tintner emphasizes methods for estimating the constants which occur in such models, rather than their economic implications. The book ends with a summary of the variate difference method for estimating variances in time series, a method to which Tintner has made signal contributions, and techniques related to it.

Clearly the book is a compendium which merits a place on the handy reference shelf of any econometrician or statistician concerned with economic data. It describes the basic ideas of a rich variety of modern analytic tools. All explanations are short, most are illustrated by practical numerical examples, and lapses from clarity are surprisingly few in a book of such scope. Its outstanding merit as a reference book has not been mentioned up to this point: the footnotes. As far as this reviewer was able to tell, all important contributions are either described in the text, or cited in the notes. For example, the discussion of weighted regression is documented with better than forty references, and this is about average. Thus the book will serve as a comprehensive descriptive index to modern statistical methods in economics and even where, as occasionally happens, Tintner's description is too brief to be self-sufficient, his citations lead the reader to original sources.

As a text, it would fill the needs of an advanced course in economic statistics, coming after a course pitched at the level of Yule and Kendall, Ezekiel, or Mood. It does not repeat the basic statistical tools treated in such texts, and acquaints the student with the more elaborate methods required by more sophisticated economic models. The most serious omission which comes to mind is that of index numbers; there is no mention of either the basic older contributions of Fisher and Mitchell, or of the more refined contributions of Divisia, Evans, and Shephard. Since much econometric work rests on index numbers or closely related aggregates, the omission is serious, but a book cannot include everything and this book includes more than anyone has a right to expect of the author.

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Economic Systems; Planning and Reform; Cooperation

British Planning and Nationalization. By BEN W. LEWIS. (New York: Twentieth Century Fund. 1952. Pp. xi, 313. $3.00.)

Asked by the Twentieth Century Fund to do a "brief reconnaissance" of

"what the Labour Government did" (Foreword) during its postwar term of office, Professor Lewis has come up with a very compact, useful and readable handbook on the more bitterly disputed nationalization measures. These are summarized briefly, and are then appraised against the general background of conditions of the industry at the time of nationalization, and in the light of subsequent management results as revealed in various annual reports. Short shrift is given nationalization of the Bank of England, aviation, communications and gas on the grounds that national ownership in these cases involved few controversial issues. Contrariwise, certain other measures—most notably town and country planning, distribution of industry, and health and housing—are dealt with at some length, even though the issue of nationalization per se played a relatively minor rôle, for the reason that they figured heavily in the Labour version of socialist planning.

Planning, not nationalization, consequently is the subject under review. The first chapter is taken up wholly with this subject, and a short concluding chapter attempts a summing up of successes and failures. Lewis finds (p. 275) that "The British economy in 1951 is 'planned' neither in structure nor in operation. Britain has no master plan." This "lack of a bold, imaginative over-all plan" pleases some and saddens others. He believes that we have here simply "plain, democratic muddling—of a fairly high quality" and that in these times "this is the way democracies behave" when compelled to face "the formidable problems of organized living-together in the middle of the twentieth century" (p. 276). Comforting support for this conclusion is supplied by the further observation that with the exception of steel, and of certain features of transport (road transport in particular), virtually all the measures taken by the Labour Government have either in whole or in part enjoyed "open support from Conservatives and Liberals." It is, hence, "thoroughly British" (p. 277).

This is all very well, and so far seems to me entirely accurate. But as a picture of the problems and solutions of the postwar Labour government it has very serious weaknesses. Omitted, in the first place, is all but incidental reference to the 80 per cent of the British economy not nationalized, and to the highly significant, but total failure, of the Labour program envisaged in the Development Council schemes. The whole social security program is not even mentioned. The issues of state support of private monopolizations involved in the highly significant seminationalization of food imports, and the elaborate controls extended over various sections of the food distribution industries are mentioned without being incorporated into the general conclusions which summarize the volume. Even more important, no attention is paid to the overseas nationalization, public projects, and development programs. Certain of these, particularly the ill-fated Ground Nuts Scheme in East Africa, and the projects of the Colonial Development Corporation are of critical significance for an understanding of the Labour program, limitations of space to the contrary notwithstanding.

These omissions do not detract from the quality of such summaries as are given in this volume. But there is a class of omissions which seems to me to seriously limit its value. To say, on the one hand, that the program "is

thoroughly British," or a bit of "democratic muddling" is merely to resort to popular clichés. But to by-pass, on the other hand, all the vital issues of theory and policy is a disaster. What is to be said about such questions as: Does nationalization mean socialization? Is national planning socialism, or vice versa? What does British "socialism" actually mean? Is this socialism merely "communism on the installment plan" as Cecil Palmer argues *(The British Socialist Ill-Fare State)?* Have the nationalized industries demonstrated an ability to solve the problems of undue bureaucratization, of efficiency, of stimulating mass participation on the part of organized labor, of arousing personal initiative? These, and a host of allied questions, are fundamental for virtually the entire range of theory and policy issues of modern times, political as well as economic. It seems a great shame that Lewis—who has ideas and opinions on these subjects—should have denied readers a review, however short, of his opinions of the very central problems which are raised by what is not only one of the most interesting social experiments of modern times, but where successes and failures are of the greatest interest to all the nations of the world with a stake in the ever-widening conflict of ideas and institutions to which this Labour experiment so directly relates.

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Lehrbuch für den Demokratischen Staats- und Wirtschaftsaufbau. By WALTER ULBRICHT. (Berlin: Dietz Verlag. 1949. Pp. 258.)

This is a type of book which is becoming an increasingly frequent and regrettable phenomenon: the collected speeches and reports of senior communist functionaries in Eastern Europe, whose position requires that they leave something written on record, but at the same time prevents them from devoting the necessary time and trouble to produce a coherent work of importance. In this instance Walter Ulbricht, the moving spirit of the Politburo of the East German Socialist Unity Party and the most important Communist there, discusses at various political, youth and labour congresses the different aspects of the Two-Year Plan, initiated in the summer of 1948 and officially terminated at the beginning of 1951. Quite apart from all other considerations, therefore, the book is hopelessly out of date as a guide to present-day conditions and policies in Eastern Germany. These have greatly changed since the book came out. Moreover, the author of these reports is neither learned, nor interested in contributing anything new to communist theory—which makes the title of the book a misnomer—but is speaking to the masses who in his own evident opinion require that the knowledge fed to them be predigested. Nearly a quarter of the book consists of slogans to be learned by heart and imparted to factory councils, youth meetings and rallies throughout the country. To be effective, slogans have to be repeated frequently, which makes dull listening and infinitely duller reading. There is at best little interesting communist writing in economics except outside the Iron curtain and Ulbricht is not one of the few, such as Hilary Minc, who

work practically and think theoretically. It is not difficult to recognise the Soviet origin of the main economic ideas. Finally, the abbreviations and the whole approach make the book incomprehensible to those not familiar with Eastern Germany. It cannot therefore be recommended for those not specially interested in this subject.

On the other hand, the book has value. As Ulbricht is forever emphasising to his listeners, East German society in 1949 was not and was not intended to be communist, nor is it so today. Hence there are gaps in the confusing Marxist jargon, and through those gaps it is possible to see the real problems and Soviet policy for dealing with them. This policy may briefly be described as designed to go no further along the road to communisation than would enable it to exploit the expected support of the proletariat living in Western Germany under conditions of Anglo-American colonisation and misrepresentation. Only when this support in the West was sufficiently powerful to overthrow the federal government and unite Germany under communist control was full-scale socialisation to follow. Meantime there were other problems—the awkward need for the velvet glove in dealing with the peasantry, the anomalous position of the technical intellegentsia, the problem of increasing production without raw materials. Ulbricht's treatment shows clearly what sort of a man now fills the big posts in communist countries; gone are the great theoreticians, the orators, the men of principles and high ideals; instead there are practical, careful, ruthless, strictly limited bureaucrats. But like all practical organisers, Ulbricht is at bottom direct and simple in his methods; consequently, outside the obligations of party subterfuge, he is relatively honest. In spite of, and not because of, its purpose, this otherwise intolerable compendium of pomposity and arrogance has a certain interest.

J. P. Nettl

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The Socialist Tragedy. By Ivor Thomas. (New York: Macmillan. 1951. Pp. 254. $2.75.)

Mr. Ivor Thomas is a disillusioned socialist who quit the British Labour Party in 1948. Prior to then he had been editorial writer, world traveller, Labour M.P., Parliamentary Secretary for Civil Aviation, and Under-Secretary of State for Colonies.

In this book he offers his assessment of socialism and communism, and by inference the reasons for his apostasy. As he explains it, he once saw the Labour Party as the means to greater personal liberty and social justice. Now he regards socialism as in substance identical with communism, and both as a major retrogression in the level of civilization. The best prospect for the future lies in a mixed economy of capitalistic and public enterprise, "firmly built upon human nature" and "offering the best hope of securing the enhancement of the material standards of life and the surest guarantee of spiritual values" (p. 249).

In Thomas' opinion, the division between socialists and communists only emerged in 1919 with the formation of the Russian-controlled Comintern.

Thus he takes no account of Lenin's rôle in the prewar Second International, nor of the bitter disputes centering upon the teachings of Bernstein and Kautsky. Rightly, however, he sees that all factions accepted an economic approach to existing society. Change the economic organization and class conflict would end. Human evil would disappear. Men would now co-operate voluntarily through love of one another. Selfishness and acquisitiveness would vanish. Moreover, all sides agreed that private ownership should be abolished, to be replaced by central state planning of economic processes.

Why, then, do socialists and communists continue to disagree? Only because the latter are Russian nationalists who also share Lenin's contempt for democratic government. In the words of G. D. H. Cole, this is only a disagreement over tactics. If so—and Thomas thinks it is so—then the socialist parties are not a bulwark against communism, as their apologists so often contend. This leads him into a review of the activities of the socialist parties *vis-à-vis* the communists after World War I. Somewhat unjustly, I think, he concludes that in the main the socialists either paved the way for communist conquest of power or greatly strengthened the latter's existing position. True, the economic program of the socialists makes the attainment of a communist dictatorship easier, while collaboration with communists has already proved a sure road to totalitarianism. But not all socialists subscribe to these policies, because their commitment to freedom is stronger than their urge for economic change or political power as such. After all, too, there is a well defined tradition of liberty among many socialists, however misplaced their faith may be.

Thomas then reviews the program of the Labour Party after 1945. He finds it has already gone a long way towards nationalization, elimination of property incomes, destruction of economic incentives, and central direction of the whole economy.

He turns next to broad philosophical issues. The state, he believes, is the real enemy of personal liberty. While he adopts a conception of ordered liberty and thus accords legitimate functions to the state, he does not succumb to the modern shibboleth that if a majority votes for increased regulation personal freedom is thereby increased. At the same time, he desires a broad distribution of private property and economic opportunities. Property then functions as a guarantee of independence and a check upon state power. On the contrary, collectivism threatens personal liberty on several fronts: it means conscription of labor in place of free choice of a job; destruction of consumer sovereignty; the end of free trade unions; and a debilitation of the legislature. Admittedly, these changes are not inevitable, but for Thomas they are highly probable.

Men are neither angels nor beasts, but for socialism to work they have to be angels. Since they are not, creative spontaneity will decline and the worst will come to the top. New and greater wastes will suplant those of capitalism and the standard of life will decline.

As a form of civilization, socialism now holds few attractions for Thomas. His argument is essentially abstract, though illustrated here and there by

examples drawn from the Russian case. For many readers, particularly those of a Fabian persuasion, the analysis will not go unchallanged. According to Thomas, a state monopoly of publishing will threaten freedom of speech. State planning will make free unions impossible. Religion, the arts and the sciences will necessarily come under the control of politicians. The internationalism of free markets will give way to nationalism and autarchy. Given these costs, Thomas counsels that we "hold fast to that which is proved." To him, this means a mixed system with a capitalistic base.

Much of the analysis is conventional, and, of course, may be disputed. Some also will reject it for the curious reason that the author has undergone a profound change of views, bringing to his new position something of the fervor of the recent convert. To the faithful, one is always suspect for changing his mind. Nonetheless, Thomas provides an interesting recital of lost illusions, of independent significance for an age in which collectivist tides have been running strongly for two generations. For those who have watched those tides with growing concern in recent years, the book will be of interest as a symptom of a process of reappraisal that is now increasing in importance.

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Business Fluctuations

Conference on Business Cycles. Held under the auspices of Universities-National Bureau Committee for Economic Research. Edited by Gottfried Haberler. (New York: National Bureau of Economic Research. 1951. Pp. xii, 433. $6.00.)

On the whole, this collection contains a great deal of excellent material, including numerous comments that are hardly less important than the main papers. The volume provides, first of all, a comparison of the viewpoints and methods of certain National Bureau economists with those of several econometricians. A. F. Burns' discussion of Mitchell's work, and Marschak's subsequent comments, review the two groups' methodological differences—the one assigning first priority to the examination of time series, the other emphasizing the formulation of a comprehensive theory. However, each group's work may appropriately supplement that of the other, and their methods may yet take them to the same destination. According to Friedman, promising paths for both the National Bureau and the econometricians to take at this point may lead them into similar endeavors—*i.e.*, attempts to use the data in studying component *parts* of the economy.

Indeed, econometrician Lawrence Klein sets out in this direction later in the volume. He advocates the study of investment behavior in individual industries, using cross-section data that provide more observations than time series; and presents multiple-correlation analyses of railroad investment and

of electric light and power investment in the United States. For railroad investment he uses time series to obtain one structural equation and cross-section data for individual companies comprising the industry to obtain a second equation. For electric light and power investment, he uses only cross-section data.

Whether National Bureau economists will ultimately find themselves doing similar work remains to be seen. In this volume, Thor Hultgren follows what may be called traditional National Bureau methods, finding that the percentage of companies with growing profits declines before business activity reaches its peak and rises before business activity reaches its trough. And Abramovitz summarizes Part III of *Inventories and Business Cycles* (National Bureau of Economic Research, 1950).

The highspot of the book, however, is not this difference in methodology, but rather Carl Christ's illustrative test of the predictive value of a particular econometric hypothesis. Christ's study, based in part upon previous tests by Andrew W. Marshall, is practically a landmark, because such tests have been so rare. Tinbergen's paper, urging restatement of the usual textbook theories of the cycle as refutable hypotheses, also puts a salutary emphasis on the testing of theories. But while many of us have been eager to urge that hypotheses be refutable, we haven't exactly been standing in line to devise and carry out painstaking tests. The Christ-Marshall work actually gets on with the job, by subjecting Klein's model of the economy to several tests. As might be expected, the results suggest that models of the entire economy are unlikely to improve our predictions greatly in the near future. Perhaps we can accomplish more by studying relationships within sectors of the economy. This study by Christ deserves more discussion; however, detailed comments are already available in Baumol's review in *Econometrica* for April 1952.

In other papers, Schumpeter discusses the historical approach, and R. A. Gordon investigates investment fluctuations during the 'twenties, using "quantitative-historical" analysis. The latter paper is a second progress report on a long-range study of business cycles in the interwar period. The author examines the fluctuations of many time series, partly in an effort to eliminate hypotheses that appear not to explain these particular cyclical movements. The procedure is similar to Slichter's examination of the 1937 decline and to T. Wilson's analysis of the period 1919-1937. C. Ashley Wright, in another contribution to the Conference, offers a new method of forecasting turning points. (Briefly, he suggests plotting the frequency per month of the turning points of individual time series, and then fitting a normal distribution to the tail of this sample distribution to estimate the reference cycle turning point.) Haberler examines the nature of cycles in partially planned economies, and Smithies surveys countercyclical governmental policy. Apparently the chief contribution of recent business-cycle study to policy formation is a wholesome emphasis on uncertainty; as Smithies puts it, the appropriate strategic assumption may differ considerably from the "best" forecast.

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Business Fluctuations. By Robert A. Gordon. (New York: Harper and Brothers. 1952. Pp. xvi, 624. $5.00.)

This volume is intended as a text for an undergraduate one-semester course in business cycles. The course, as envisaged by this text, is more inclusive than the traditional one. It assumes the inclusion of an elaborate introduction to the theory of income and employment and an extensive treatment of the principles and methods of economic stabilization, including fiscal policy. This expanded scope of the traditional course is accompanied by coverage of the more usual contents of a business cycles course, which is both complete and eclectic. The indifferent instructor could easily use the book as his sole reading assignment.

The text begins with a 123-page introduction to the national income accounts and the theory of income determination. The development is conventional and includes all the necessary warnings about the simplistic assumptions of behavior usually made in the theory. The only shortcoming in this section which might create difficulties for the student is the repeated statement that expenditures on new final product are the income-generating expenditures which are the key transactions to an understanding of cyclical movements. This emphasis does not prepare the reader for the later discussion of short cycles where the volatile movements of intermediate transactions are stressed.

Part II of the text, over 300 pages, covers the more traditional contents of a business cycles course. It includes chapters on the times series used in measuring business activity, the decomposition of times series into different kinds of economic change, the instability inherent in the business economy, a summary of the findings of the National Bureau of Economic Research's monographs on business cycles, a synthetic description of what happens during the phases of the cycle and at the turning points, a discussion of the many business cycle theories, and a lengthy analysis of the period from 1919 to 1949. The treatment in this part is consistently of a high order.

However, in two respects, the instructor with different tastes will have to make use of additional texts. The first is that the historical analysis of the structure of the world economy is barely mentioned and the changing nature of capitalism and capitalistic institutions is inadequate. This, of course, is a general deficiency of almost all undergraduate texts. Though the business cycles course is frequently the sole course which treats of the "dynamic economy," the student is rarely equipped with a historical perspective by which to continue his own informal analysis of our rapidly changing world economy for the forty years of his life following the completion of his academic studies. Part of the explanation for this historical myopia is that this text, like all others in the field, is restricted to the experiences of the United States with only tangential references to other similarly developed industrial economies.

The other field of the text which requires supplementation is the econometric approach. The text offers a well-done but overly brief eight-page appendix. Econometric models are being used increasingly in academic, in-

dustrial and government research, so that a firm understanding of these models will be necessary for the research workers, and helpful for the layman.

Part III includes a chapter on forecasting, another on the international aspects of the cycle, and the remainder, about 100 pages, covers the goals and techniques of economic stabilization. In addition to a lengthy discussion of fiscal and monetary policies, the text analyzes various other techniques by which consumers' expenditures and private investment might be affected. The handling of these controversial issues is never misleading and always includes the assumptions made by the advocates, and the counterarguments offered. The list of policies discussed is incomplete in that some of the common government reactions to cyclical movements, such as price and wage controls, allocation and rationing systems, revolutions and imperialistic expansionary efforts are totally ignored.

The text will find ready acceptance in the business cycles course. The exposition is clear and the arguments competently developed. Its major shortcomings are those which are common to most of the undergraduate economics courses taught in the universities in that they lack historical dimensions.

Julius Margolis

Stanford University

Business Forecasting: Principles and Practice. By Frank D. Newbury. (New York: McGraw-Hill. 1952. Pp. vii, 273. $4.75.)

The importance of this book derives from the experience the author brought to it: he was in charge of forecasting at Westinghouse Electric Corporation for several years, and he earlier made an interesting study of the forecasting work of 37 companies for the Controllers' Institute of America.[1] The discussion of the operation of forecasting machinery in a large company is one of the most valuable parts of the book. For instance, Mr. Newbury describes the difficulty which arises when compromises on forecasts are made at low levels in the organization while top management sees only the final conclusion. A clarification is made of the author's well-known emphasis on subdivision of series into component cycles of different lengths.

The book opens with a discussion of the organization of forecasting activities, turns to an explanation of the multiplier, considers the influence of the money supply, presents an extended discussion of component cycles determined by moving averages and by Brumbaugh's rate-of-change method, and ends with the problems of forecasting the production index, prices, and sales.

Two major methods of forecasting total activity are presented. The first depends on the assumption of autonomous investment. Investment is taken to include gross private domestic investment, government purchases from business, and net exports of goods and services. The omission of other parts of net foreign investment is highly reasonable at a time when government influences have made them move so erratically. On the other hand, omission of

[1] *Business Forecasting: A Survey of Business Practices and Methods* (New York: Controllership Foundation, Inc., 1950).

government purchases of services must be defended by stability of movement. In studying the influence of investment Newbury has underestimated the importance of inventory change, placing chief reliance on plant and equipment investment.

Attempts are made to classify periods of time in such a way as to obtain a stable relationship between investment expenditure and Gross National Product. Newbury states that the postwar relationship he develops will hold for 1951. The 1951 GNP turned out to be 16 per cent under the projection indicated, even assuming actual investment expenditures would have been forecast perfectly. The difficulty is that changes are initiated by consumer expenditure as well as by investment. Newbury assumes that consumption expenditure is completely dependent upon the multiplier relationship.[2]

Chief reliance is placed on surveys to determine future investment, although the component-cycle method described in the following paragraphs is also mentioned in this connection.

The second major method presented for forecasting activity involves breaking series down into component cycles of different lengths. Newbury avoids the assumption that the indicated periodograms can be mechanically projected into the future. He emphasizes reliability of direction of movement for a considerable time after a turning point is reached. This, he believes, applies particularly to the residential building cycle, which he thinks closely approximates a regular 18-year cycle. In fact, the movement of this cycle is his chief reliance in forecasting component cycles.

Newbury believes that each series has its distinctive cycles. He places no emphasis on interrelationships and states that the integral cycle is harder to forecast than separate cycles in individual series.[3] The existence of the business cycle depends upon cumulative movements that carry along expansion and contraction. Such influences originate in the integral movement although they may be superimposed on individual series. Other than for seasonal variation, logical explanations of independently generated cycles in individual series are generally lacking.

Newbury's outline is hard to follow. The book represents an attempt to put the forecasting problem in bold relief for the business man, and, to further this end, Newbury attempts to be nontechnical. In this he is not very successful and the development becomes complicated. When the subject under discussion naturally calls some problem to mind, Newbury does not hesitate to discuss it at length.[4]

Newbury has described his intellectual experiences honestly and critically. In many ways he takes a wholesome attitude on the forecasting problem. For instance, he does not hesitate to include some wrong forecasts made by himself. He has avoided the over-rigidity accepted by most students accepting

[2] A statement on page 204 may be interpreted to infer a shifting accelerator over the business cycle, but this is at variance with the rest of the book.

[3] Pages 198, 205. This is partly in conflict with the idea that GNP can be forecast from investment expenditures. He holds stabilization to be an over-all problem (pp. 262-64).

[4] About half of the chapter on forecasting prices is devoted to a discussion of the problem of inflation.

mechanical cycles: "The chief sin against business cycle use is, as has been said, the rigid mechanical projection of average-length cycles . . . (p. 189)." But the reviewer believes that Newbury's methods are still too mechanical to have substantial promise. Investment is not essentially autonomous. The division of a series into several component cycles which have no logical explanation is little better than mental gymnastics.

ELMER C. BRATT

Lehigh University

Money and Banking; Short-Term Credit; Consumer Finance

Le Contrôle du Crédit à Court Terme. By O. J. BRONCHART. (Louvain: Université Catholique de Louvain. Collection de l'Ecole des Sciences Economiques No. 45. 1951. Pp. 207. 245 fr.)

This book is a comparative study of the principles and the methods of credit control in Western Europe, with main emphasis on Belgium. It is especially valuable since the author, a staff member of the National Bank of Belgium, has offered authoritative comments on the experience of a country where monetary policy has been used throughout the postwar years with particular promptness, resoluteness, and effectiveness.

Mr. Bronchart discusses in turn the discount policy, the open market operations, primary and secondary commercial-bank reserve requirements, and selective credit regulations. No general rule has been laid down in Belgium in favor of a policy either of cheap money or of dear money: As circumstances required, the discount rate has been raised or cut; differential rates applicable to particular types of transactions (export paper, import paper, etc.) have been subject to variations that have not necessarily followed those in the principal discount rate; and eligibility rules applicable to various types of discountable paper have likewise been made more strict or more liberal in response to changing conditions and requirements.

This flexible discount policy has been fairly effective because the commercial banks had been prevented, as early as 1946, from selling government securities to the central bank in order to increase their loanable funds. The special reserve requirements in Belgium, which call for compulsory reserves equal to 60 per cent of commercial-bank deposit liabilities (four-fifths of these to be held in the form of special Treasury certificates), were the first formal regulation of this type in any Western European country. Through them the Belgian authorities have been able to institute a tight money market for private credit. These requirements have, however, been conceived as a credit control measure, and not one for the establishing of a protected government bond market, and accordingly the Belgian government has had to compete in the money market along with the private demand for credit. Although the interest rate on the special Treasury certificates held by the banks as compulsory reserves has been kept unchanged at a relatively low level—a

level about which the author has some doubts—the Belgian policy has consistently aimed at maintaining reasonable monetary stability rather than any predetermined interest rate pattern, even at the cost of higher interest charges on government debt.

For the American student of monetary affairs, Mr. Bronchart's book is a very useful account of the recent innovations in the mechanics and the principles of credit control. It is to be hoped that other monographs similar to Mr. Bronchart's book will eventually record the recent revival of monetary policy in other countries of Western Europe.

M. A. KRIZ

New York, N.Y.

The Quantity Theory of Money—A Critical Study of Its Historical Development and Interpretation and a Restatement. By HUGO HEGELAND. (Göteborg, Sweden: Elanders Boktryckeri Aktiebolag. 1951. Pp. x, 262. Price Kr. 25.)

This is a competent and not overlengthy description of the processes by which monetary theory has come to be what it is, together with a statement of the author's own interpretation of the quantity theory in which he reconciles or synthesizes neoclassic and Keynesian views.

The book is divided into two parts. In the first or main part the author attempts to identify the real meaning of the quantity theory by selecting various versions of statements made in their settings. He is not interested in tracing origins. Key statements are drawn from Xenophon, Copernicus, and other alleged forerunners of the quantity theory, from Locke and Hume and other so-called "founders" of the theory and their critics. Views of the classical economists are developed, as are those of American adherents and their critics. The Cambridge School rates a short chapter and the French and Italian, the German and Scandinavian writers are neatly classified. Part I ends with a summary and a formulation of the fundamental content of the quantity theory and its different "misinterpretations."

Part II is devoted to the author's own interpretation, based primarily on the synthesis of two sets of views—one emphasizing the function of money as a medium of exchange and the other the Keynesian concept of liquidity preference or store of value function.

The author introduces in his analysis the use of quandrants on one diagram for illustrating the relation between four variables; namely, (1) the demand for money (cash balances), (2) income, (3) savings, and (4) investment. (See pages 230, 234.) He attributes the use of this ingenious method to the Swedish economist, Professor T. Palander, of Uppsala (see footnote, page 229). The book contains an excellent bibliography of books and articles and an index of names.

In his Preface, the author indicates that he began this study at Göteborg, under Professors Gustaf Akerman and Ivar Sundbom. He also gives recognition to Professors Edward C. Simmons and Joseph J. Spengler, of Duke University, where he spent part of his two years in this country on a joint

American Scandinavian Foundation and Swedish Social Science Research Council appointment.

JAMES WASHINGTON BELL

Northwestern University

Readings in Money and Banking. Edited by CHARLES R. WHITTLESEY. (New York: W. W. Norton. 1952. Pp. xiii, 471. $2.95.)

This set of readings consists of over 100 selections from articles and books on various phases of money and banking, and is designed to supplement textbooks in this field. Professor Whittlesey has leaned heavily on official sources for his material, about a quarter of the selections coming from annual reports and other publications of the Federal Reserve Banks (particularly those of New York and Philadelphia), the Bank for International Settlements, the International Monetary Fund, the Federal Deposit Insurance Corporation, and other agencies. In addition, there are over 30 selections authored by individuals who are now, or recently have been, associated in one way or another with the Federal Reserve System. The remainder of the excerpts comes from other academic economists, journalists, private bankers, and businessmen.

The selections are segregated into a rather large number of parts—fifteen in all. The first four parts deal with the money supply and banking operations, the fifth with Federal Reserve policies, and the sixth with some suggested reforms of the banking system. The next three parts take up monetary and income theory and full employment policies; these are followed by selections on war finance, inflation, direct and indirect controls, and interest rate policies in peacetime. The final two sections consider international monetary problems.

On the whole, the selections appear to be well chosen. Instructors using this book will be especially pleased with the discussions of topics which have not generally appeared in textbooks, either because of their highly technical nature, or because of their recentness. These topics include Federal Reserve float, federal funds, "X" balances, selective credit controls, the voluntary credit restraint program, and the Federal Reserve-Treasury controversy along with the recent "accord." There are also some excellent excerpts from articles or books by Musgrave, Haberler, Chandler, Robertson, Pigou, Lerner, Keynes, and others. To this reviewer, the high point in the readings is reached in the selections dealing with the case for and against easy money. Reading straight through these selections gives one the feeling that he is seated in the midst of an excellent and stimulating round-table discussion, with Whittlesey, as chairman, first giving one side and then the other the floor. After the chairman has presented the final participant, D. H. Robertson, there is no doubt that one has attended a debate of the highest caliber.

Some other portions of the book, however, may prove somewhat less satisfactory to those using it. The selections on monetary and income theory add little if anything to what has been included in some recent money and banking texts. The same may be said for a few other selections, such as the one on deposit creation. Some selections seem quite trivial and although Whittlesey

states that no items were included for amusement alone, he might well have had his tongue in his cheek when making this statement. A few excerpts, such as the one from Lloyd Mints' recent book, are too short to present adequately the arguments of their authors. Finally, while this is no criticism of the book, the use of the *Federal Reserve Bulletin* in the classroom would obviate the need for some of the selections.

But these are minor complaints. The book can be highly recommended as a useful set of readings for both undergraduate and graduate students, and portions of it should also appeal to the general reader. The price of the book should appeal to everyone.

John Gurley

Princeton University

Business Finance; Investments and Security Markets; Insurance

Securities Regulation. By Louis Loss. (Boston: Little, Brown and Co. 1951. Pp. xxvii, 1283. $17.50.)

The size of this volume will leave little doubt in the mind of anyone that, after twenty years, federal regulation of securities has come of age. In the process it has carved out for itself a significant area in the field of administrative law and is well on its way to becoming a legal specialty. And this book is the most complete guide to the maze of legal concepts, statutory enactments, regulatory orders, and court interpretations covering security issuance and sale that to my knowledge has so far appeared. Unlike the earlier significant volume by H. B. Cherrington, *The Investor and the Securities Act* (Washington, 1942) and the more recent excellent book by E. T. McCormick, *Understanding the Securities Act and the S.E.C.* (New York, 1948), the author does not confine himself to the Securities Act of 1933, but deals with security regulation at the federal level whether it happens to take place under the Securities Act of 1933, the Exchange Act of 1934, the Public Utility Holding Company Act of 1935, the Trust Indenture Act of 1939 or the Investment Company Act of 1940. Some consideration is also given to the Commision's activities under Chapter X of the Bankruptcy Act, and to the work of the I.C.C. and the Federal Power Commission in so far as they have control over security issuance and sale. Thus the scope of the book is nothing less than the whole range of activities of the Securities and Exchange Commission as it regulates issuing corporations, underwriters, sellers, stock exchanges, brokers, trustees, utility holding companies, investment companies, etc., that participate in the purchase or sale of securities. (Non-securities functions of the Commission are for the most part omitted.)

Anyone familiar with the many ramifications of these laws—particularly the Acts of 1933 and 1934—the wide range of Commission responsibility and discretion in enforcing them, the massive body of rules and regulations that has developed, and the court decisions through which the final meaning of the

laws is being hammered out, can understand why the book is of sizeable proportions. And it has been made larger by the author's desire to provide definitive answers to complex legal problems, and to give recognition to the various shadings of meaning and opinion that so delight the legal mind. In addition, a great deal of up-to-date and extremely valuable material on state securities (blue-sky) laws and regulatory practices in other countries—particularly England and Canada—has been interpolated to provide the reader with much useful information not easily available elsewhere. Here is a significant contribution that will interest many general readers whose taste for legal niceties is less than lukewarm.

The author seems to have aimed at completeness and his treatment in many places is exhaustive. Thus to the layman the book will appear formidable. Its 1,179 pages of text (graced with 4,000-5,000 footnotes, I would guess) are closely packed with facts and logic, but the writing for the most part is fresh enough to keep the reader's interest if he knows his way around in this field or is "looking up the law." One who is not overwhelmed by mere size will find that in good measure the author has achieved his objective of making a learned and somewhat technical book readable, although the detail in some sections will be of interest primarily to members of the legal profession.

Only one who has lived with security regulation day in and day out for many years could have anything approaching the breadth of background and the penetrating insight that are evident here. The author, who has been Associate General Counsel of the Securities and Exchange Commission since 1948 and a member of its legal staff since 1937 is also a teacher of law at Yale and George Washington Universities. His approach is definitely that of a lawyer, and it is not surprising to find him quite sympathetic toward security regulation as we now know it. Where there are defects in the regulatory process, he would seem inclined to cure them by more regulation rather than less. On the whole he is objective rather than Messianic in his approach, but in one or two places his conclusions seem overly dogmatic: for example, where he states that the dissolution of holding companies was necessary to preserve private utilities (p. 92), or that private placement of securities has little relationship to the Act of 1933 and ". . . would not be substantially affected if the Act were to be repealed altogether" (p. 401). Possibly he is right, but on such issues dogmatism seems out of place. Fortunately, such instances are rare.

The book does not contain much that is strictly economics, for the process of regulation rather than its economic implications is the central theme. However, those who teach advanced courses in Corporations, Corporation Finance, Public Regulation or Administrative Law will definitely want to have it within easy reach. And those who are engaged in the practice of law or securities regulation will find it nothing short of indispensable. It is probably the most complete and significant book on the subject that has been published to date, and I would expect it to be the definitive work in this field for some time to come.

Chelcie C. Bosland

Brown University

Public Finance

The Federal Taxing Process. By Roy Blough. (New York: Prentice-Hall. 1952. Pp. x, 506. $5.00.)

Occasionally there appears a book in which theoretical analysis and practical experience are so aptly interwoven as to give assurance to the reviewer that the work will become a classic in its field. The present volume deserves such a place in any list of writings on federal taxation. Its great merit consists of: (1) Its close and appealing logic, (2) the scrupulous effort of the author to present all aspects of controversial questions, (3) the significance of the factual material, and (4) the painstaking care with which the book has been written. As a result of his long service in government, first with the Wisconsin Tax Commission, and later with the Department of the Treasury and Congressional tax committees, Blough has had a rare opportunity to observe how tax policy is determined and how tax laws are made. That he has used the opportunity with great effectiveness and with remarkable insight and understanding, will be apparent to all who undertake a thoughtful study of his book. Its preparation covers a long period, beginning with the author's association with the Treasury Department in 1938. However, it was written mainly at the University of Chicago between 1946 and 1950.[1]

In portraying the federal taxing process, Blough is chiefly concerned with the making of tax policy, the implementation of the policy, and tax administration. Policy may be compared with the general foundation of a tax structure, while implementation is the detailed superstructure. The general objective is "that elusive concept, the public interest." The foremost purpose of the book is to show how tax policy evolves from conflicting opinions and by the resolving of disagreements. The contents are divided into five parts: I, The Clash of Opinion; II, Passage and Application of Tax Laws; III, Considerations Relating to the Level of Taxation; IV, Considerations Relating to the Distribution of Taxes; V, The Taxing Process and the Public Interest.

The goal of the public interest is elusive because of the variation in the pattern of values of individuals and groups. Since it is a subjective factor, it is not amenable to proof by measurable data. There are three major elements of the federal tax problem, each of which gives rise to disagreement and conflict. The first is mainly economic in character, involving the incidence and effects of taxes, and is related to tax policy through the scientific function of forecasting the effects that tax changes would have under expected conditions. Here controversy arises over the interpretation of data and the weight of the tax load on various individuals and groups. A second aspect is the political function of "evaluating conflicting interests of different regional, income, wealth, and occupational groups, and competing public values—equality,

[1] It is encouraging to note the increasing number of volumes that have appeared in recent decades, written by men who combine fundamental training in taxation, the national debt, etc., with long experience in government. A few examples are: *Making the Tariff in the United States,* by Thomas Walker Page; *Taxable Income,* by Roswell Magill; *Taxation for Prosperity,* by Randolph E. Paul; and *National Debt in War and Transition,* by Henry C. Murphy.

freedom of action and movement, rate of economic progress, stability of production, and so on." The people must make choices through the political mechanism. A third consideration is that political choices must be made effective by specific legislative provisions. Although final decisions are made by political representatives, the economist, lawyer and politician are all necessary in the process of forming tax policy. All groups manifest a desire to achieve the public interest as an objective, but in the tug and pull of conflicting motives, the full realization of this goal is never attained.

One of the most revealing sections of the book is that which portrays the rôle of tax specialists or "experts" in the making of tax laws. For many years the Treasury Department has maintained a competent tax staff and the staff of the Joint Committee on Internal Revenue Taxation plays a highly important part in tax legislation. These staffs exercise much influence over the Ways and Means Committee and the Finance Committee of Congress and are called upon not only for information but also for recommendations. An interesting question arises on the proper attitude of the tax economist—whether he should maintain strict neutrality or seek to inject his own ideas and predilections in the formulation of rate schedules and tax-making policy. Blough rightly holds that the basic task of the expert is to supply analyses and facts, but not to enter actively into the decision-making process. Above all the expert should strive to eliminate emotional bias and to maintain a high standard of professional integrity and objectivity.

Blough classifies the functions of taxation as: (1) the revenue-supply function, which consists of supplying funds to the government, (2) the anti-inflationary function of taking money (spending power) from the taxpayers, (3) the fiscal-discipline function which serves to promote an optimum level of government expenditures and (4) justice in the distribution of the economic cost of government. He observes that through its power to issue money, and control over the banking system, the federal government "can secure an unlimited number of dollars for expenditure without raising revenue through taxes" and that "there is no physical limit to the size the federal debt could reach without danger of *financial* bankruptcy. . . ." These are statements of fact only and do not imply sanction of an irresponsible fiscal policy. The primary function of taxation is to raise revenue, but the anti-inflationary effects are also of first importance. Should the amount of revenue collected be equal to, more than, or less than, expenditures? The answer depends upon the need for price stability and the prevailing economic conditions. An effective anti-inflationary program will certainly require heavy taxation as well as various direct measures of control. By the fiscal discipline function the author means the exercise of discipline on government spending, and hence, on taxation. The benefits of government expenditures should be weighed carefully against the burdens of additional taxes.

In the appraisal of a tax proposal Professor Blough regards justice or tax fairness as next in importance to the effects the measure would have on the vigor and growth of the economy. Together they are the ethics and the economics of taxation. Fairness is a relative social concept that evolves over time. For several generations it has moved toward a stronger belief in

progressive taxation. At the same time various pressure groups have succeeded in persuading Congress to modify the effect of graduated rates through loopholes that result in exemptions. Since there are various objectives of tax policy, the economist endeavors, in so far as possible, to achieve all goals simultaneously, but failing that, he assists the policy makers in choosing alternatives. A "model" tax system, however perfectly conceived, will inevitably be altered in the policy-making process.

The author would doubtless be the first to admit that he has raised some issues that have been left unsettled and that certain conclusions are debatable. It is only natural that he should hold a sympathetic view of the effort of the Executive and of the Treasury Department to influence the course of tax legislation. One may readily agree that the Treasury Department has particular advantages in dealing with specific provisions and technical issues of a tax proposal, but one may question whether the President is more likely to represent the "broad national interest" in a general tax program than is the Congress. May not the President himself at times be indebted to pressure groups and may not the Secretary of the Treasury reflect this obligation? When the President and a majority in Congress happen to represent opposite political parties, does it necessarily follow that the President is more likely to represent the will of the people and the broad public interest? Should the public interest be determined by a majority of the electorate through the political mechanism?

Again, Blough appears to lean mildly toward the Keynesian economics of the maintenance of full employment by means of fiscal policy and the use of other controls. He has an illuminating discussion of the flexible compensatory budget and the consequent raising and lowering of tax rates, as a device not only to mitigate depressions but also to forestall them. This necessitates a forecast of business changes, and therein lies a principal weakness of the whole compensatory fiscal program—the failure of science to provide schemata for accurate business forecasts. Other problems lie in persuading Congress and the public to accept the stabilization of business as a dominating policy objective. Despite these obstacles, the author "sees no other practical course open than to make the best use possible of compensatory budget policy." Yet he concludes, rather wistfully perhaps, that there is no prospect in the foreseeable future that Congress will grant the Administration power to change tax rates without further legislation. The reviewer would at least raise the question, fully recognized by Blough, as to the blunting of incentives, the retardation of production and the slowing of economic growth, which might follow from the imposition of fiscal policy and other controls.

Criticisms of this nature, however, if valid at all, are surely minor. Blough, by revealing the intricate processes by which federal tax laws are passed, has made a contribution for which students, government personnel and the general public will long be grateful. His book will remain a standard work in federal finance for many years ahead.

Tipton R. Snavely

University of Virginia

Taxation and Business Concentration. Symposium conducted by the Tax Institute, June 15-16, 1950. (Princeton: Tax Institute. 1952. Pp. viii, 264. $5.00.)

Are big taxes creating big business? This question was essentially the subject of a symposium conducted by the Tax Institute a few days before hostilities began in Korea. In effect, the answer was, "Yes, but no one can say whether the total net effect is tiny or large." Most of the 21 participants were attorneys, accountants, and business officials. The economics profession, however, was ably represented by Buehler, Butters, and Somers. The volume is divided into six parts covering: (1) the general subject, (2) the problem of retained earnings (including depreciation), (3) tax-exempt businesses, (4) individual tax rates and business development and expansion, (5) corporate tax provisions affecting business concentration, and (6) a theory of business taxation. The 21 chapters average less than 10 pages each. In addition to an index there is what I judge to be an excellent selective bibliography.

The quality and interest of the papers are uneven. Almost all of them suffer from enforced brevity. Moreover, with the exception of Ruml's paper on excess profits taxation prepared after the symposium, the discussions do not take account of the substantial increases in tax rates and revisions of the tax structure since June 1950.

Butters shows how income and death taxes create forces leading to business mergers and recommends that this general pressure be given consideration in revising the tax structure; he emphasizes, however, that the evidence he has studied indicates that the tax inducements to business concentration have not yet begun to operate on a major scale. His essay, like many of the others, refers to some of the many highly technical features of income and death taxes. The twists and quirks of tax laws have become so complicated that all of us find them hard to evaluate, yet we know that they may be critical in a few (or many?) cases. Butters handles them competently, but most economists are likely to fail to appreciate all that is involved. Somers concludes that the taxes discriminating against large scale retailing (such as those on chain stores) are not important but that corporation income taxes discriminate against the "operation and growth of small retail establishments" because large firms have easier access to financing.

From this point until almost the end of the volume we find conflicting views and evidence. In my opinion the paper showing that the flat-rate cigaret tax hinders competition of lower priced cigarets wins over its opponent. The discussion of Section 102 (which imposes a penalty on undistributed corporate earnings in certain cases) takes the modest view that the section as administered has some effect, but not a great deal, encouraging concentration. One of the most concrete essays is that on depreciation; it concludes that in practice large firms have an advantage over small ones; one major thesis is that the small business cannot afford to keep the records and fight its case on depreciation whereas the large firm can do so and often

wins a tax reduction.[1] Tax negotiation is an area in which there appear to be substantial economies in large size. Carry-over and carry-back provisions are said to have little effect; whatever there is seems to discourage concentration. One essay asserts (correctly) that tax laws made mergers easier than breaking up corporations; this conclusion has been made somewhat obsolete by a recent change in the statute; economists not familiar with tax technicalities may have difficulty appreciating the issues, which are not discussed adequately.

The discussions of the effects of the tax exemption of cooperatives and other wholly or partially tax exempt businesses are disappointing. The chief reason, I think, is the lack of a good theory of "business" taxation. A confusion of issues also creeps in. Tax exemption may have one kind of effect on concentration ("not a great deal" is probably what the facts shown reveal) and another effect on the extension of government ownership ("a great deal" in the long run I suspect). These two issues are not clearly distinguished. Cooperatives get extensive and inconclusive treatment.

An essay on capital gains taxation fails singularly to take account of economic thought and the factual material available. Polisher's discussion of death taxes, however, is one of the better essays. It shows how family-owned firms may be pressed to merge with others to solve death tax problems; legislation has since eased the problem, at some sacrifice in what many economists would call equity, but no thorough-going attack on the problem seems probable. Ruml argues that smart managements of firms subject to excess profits tax will take advantage of "cheap" dollars (those most of which would go in taxes) to prepare for the future; these businesses will thereby gain a long-run advantage over small and less successful firms. Finally, Buehler's concluding essay on the theory of business taxation will probably serve economists, as well as the business world, for which I suspect it was chiefly intended, as a good summary of thinking on the subject.

The economist is likely to find the volume disappointing, more so than the paucity of basic data absolutely require. Yet the volume is stimulating. It does bring some of that knowledge we need so badly—the experience of men facing the actual problems of the business world. In fact, I can strongly recommend the volume for anyone who has the slightest doubt that today's high taxes produce many unexpected and undesirable results. Yet the scholar will yearn for more depth, more thoroughness. The disappointment is that the busy men of affairs who contributed seldom give us what they know so well—what goes on in the real world and why. As a concluding note, I should like to add my own belief that taxes are likely to have more

[1] Depreciation deduction rates rest on administrative ruling rather than legislative direction. The administration is presumably under the ultimate direction of the President. An interesting quotation from a public statement of President Roosevelt (and also Vice President Wallace and Mr. Hopkins) about the desirability of more generous depreciation allowances may suggest the gap between fine aspirations at the top of government and day-to-day administration.

effect than the authors indicate. There is the obvious reason that rates have risen greatly in the last two years. In addition, however, I feel confident that taxpayers will gradually overcome a "cultural lag." They will learn more about their tax problems and what they can do, within the law, to cut their tax bills. My own studies have convinced me that taxpayer ignorance of "the angles" has been extensive but that it is bound to decline. Therefore, the evidence to be found in this volume about the effects of taxes cannot be trusted to reveal the future.

C. LOWELL HARRISS

Columbia University

Die Belastung durch die Persoenliche Einkommensteuer in Deutschland, England und den Vereinigten Staaten. By DR. RUDOLF BINDER. (Kiel Instituts fuer Weltwirtschaft, Universitaet Kiel. 1950. Pp. vii, 196, Appendix.)

In 1949 the German Republic prepared a few moderate relief provisions in the personal income tax law of the Republic. The Allied High Commissioners objected to the contemplated tax measure. After several weeks of negotiations, the protest was withdrawn and the contemplated measures became law. This book was originally written as a memorandum for use in the negotiations between the German Republic and the Allied High Commissioners.

The author reaches the conclusion that "the incomes up to 50,000 DM are burdened through personal income tax—in Western Germany four times and more the burden in the United States, and one and a half times and more the burden in Great Britain. . . . After deduction of all taxes there remained in 1948 in Western Germany a residual income per capita of 1285 DM, in England of 2660 DM, and in the United States of 4761 DM. This corresponds to the relationship of 100 to 207 to 371."

The author states that the large differentiation in tax burdens and residual income (after taxes) represents "a considerable handicap for the economic integration of the Western German Republic into the Western world. . . . The harmonizing of production and exchange of goods of various countries within the frame of the European Recovery Program must be followed sooner or later by a harmonizing of finance and tax systems and tax burdens."

The economic conclusions quoted above are not elaborated in this book. The tax comparison, however, is based on careful consideration of limits and defects in international tax comparisons.

The author presents in considerable detail a comparison of tax rates, tax exempt limits and permissible deductions in the personal income tax for the three countires.[1] He also presents comparisons of the level and distribution

[1] Some part of the comparison is based on secondary sources. In the meantime the same author has published a very instructive volume on the development of taxes in the United States from 1939-1952, *"Die Steuern in den Vereinigten Staaten von Amerika 1939-1952,"* Institut fuer Weltwirtschaft an der Universitaet Kiel, January 1952.

of national incomes. The German income tax law has lower tax exempt limits and is less generous with respect to deductions than either the United States or Great Britain; it has higher tax rates in those brackets in which most of the taxable income lies. It is more generous than the United States only in the treatment of long-term capital gains, and in making certain allowances in the interests of economic reconstruction. In spite of rather drastic income tax rates and low exemptions, the yield of the German income tax is limited because of the low level of incomes and the concentration of incomes in the very lowest brackets. From this the author concludes that in a poorer country more use must be made of other than personal income taxes (particularly of excise and sales taxes).

The comparison of the tax ratio imposed on the people with comparable incomes (the author considers the inadequacy of the official rates of exchange) in itself is not objectionable. The author fails to point out, however, that other perhaps equally justified methods of comparison (*e.g.*, comparing the tax burden of the median tax payer in the various countries) would lead to quite different conclusions.

In the discussion of the factors that influence the immeasurable tax pressure there is a somewhat one-sided selection and emphasis. The author states correctly that the British subsidies are a factor mitigating the tax pressure, while the use of tax money "for occupation and reparation aggravates the tax pressure, at least indirectly." This latter statement is not elaborated or explained. The author fails to mention that tax pressure depends to some extent also on the rapidity of preceding tax increases or tax reductions over a period of time. He refers once to differences in the task of various governments. He fails, however, to view the postwar tax burden in Germany on the one hand, Great Britain and the United States on the other hand in the historical perspective of World War II. For instance, the comparison of income left after taxes, which we quoted above, cannot be adequately interpreted without reference to the effect of the war on each of these three countries. Without the historical perspective the demand for some "harmonizing . . . of the tax burdens" of these countries is meaningless.

There is no reference to the responsibilities of the German government that grew out of the need to bring about some equalization of the burden of war destruction and of the uneven imposition of the burden of currency reform. The author rightly points out that taxes raised for paying subsidies in Great Britain require special treatment. The same is true of taxes for the equalization of the war burden. It is true that in 1948 these measures did not yet play a significant role. But they should have been considered in a study that compared taxes of the past for the purpose of drawing conclusions for the future. The fact that a considerable portion of taxes in the United States and Great Britain are used for internal debt service while the German internal debt has been largely wiped out by the currency reform should also have been mentioned as one of the factors that make for a difference in tax pressure.

This book is largely based on the tax laws of 1948 and the results are no longer up to date. According to most recent estimates[2] the tax ratio in Great Britain has become higher than that of Germany, and today's tax ratio in the United States is only moderately below that of Germany. Even though the conclusions would not apply to today's tax rates the book still contains very valuable comparative information and the technique used by the author should be studied by those who are concerned with evaluating foreign tax systems. The study presents a useful warning to those who think that tax ideas can easily be transplanted from one country to another. The study will also be of interest to those who are concerned with the difficult question of the "fair" contribution of various countries to international undertakings, such as the United Nations and its various organizations, NATO or the European Defense Community. It presents a valuable contribution to a topic that probably will be much discussed in the future.

GERHARD COLM

Washington, D.C.

Financial History of the United States. By PAUL STUDENSKI and HERMAN E. KROOS. (New York: McGraw-Hill. 1952. Pp. x, 528. $6.50.)

This volume is a well-organized and clearly presented account of the history of governmental financing—primarily federal, with some sidelights on state and municipal finances. It thus follows the pattern set by the pioneer work of D. R. Dewey in his *Financial History of the United States.* The task of coordinating the subject matter of public and private finance—the finance of governments and public bodies and that of private corporations—still remains to be done. Public and private finance are interrelated. The policies adopted by the Treasury throughout American history, and in more recent years by the central banking authorities, exert definite effects upon the course of private finance. And the course of action traced by business men produces money and market forces that government agencies must normally respect. The succession since the late 1870's, for example, of voting trusts, holding companies, and mergers in their many ramifications was an outgrowth to a considerable degree of federal and state governmental policies. If this coordination of public and private finance is not presented, a financial history is, realistically speaking, only a history of public financing—of the raising and spending of funds by governments and public agencies.

The book under review is best in its descriptive and statistical phases. It discusses laws and governmental policies in satisfactory detail—perhaps more than is necessary for clarity and understanding. Comprehensive statistical data are furnished, particularly on federal revenues and expenditures, on the federal debt, and on the banking system.

A number of descriptive presentations are particularly admirable. The evalution of the state banking systems, and the reforms introduced by state

[2] See *The Mutual Security Program for Fiscal Year 1953.* Basic data supplied by the Executive Branch, House Committee on Foreign Affairs and Senate Committee on Foreign Relations, Washington 1952, p. 60.

laws and private initiative are clearly and succinctly developed. The discussion of the silver problem—especially the various phases between 1873 and the dramatic climaxes in the 1890's—is a model of descriptive clarity. Expressions of views on policy are not as happy as the descriptive and statistical phases. The New Deal's deficit spending of the 1930's, for example "saved millions of workers, farmers, and small business men from destitution and saved society from moral and economic distintegration." This is strong stuff. It certainly would be undesirable for students to be given this rather extreme point of view without also having an opportunity to learn something about the other side of the case.

There appears also to be an inclination to look with favor upon a policy of government spending to offset deflationary tendencies. The debt retirement policy of the federal government in the 1870's and 1880's, the book notes, "tended to transfer money assets from nonsavers in the lower income brackets to those in the upper brackets who saved most of their incomes. Fortunately, there were ample investments outlets for savings, and in the long run, debt retirement benefited society by increasing capital accumulation, investment, and productivity." The case for the productive investment of savings can be presented much more powerfully. The use of savings to finance new and expand old industries made the decade of the 1880's one of the most productive in American history. Electrical equipment, central generation and distribution of electricy, telephone, open-hearth steel, electric street railways, oil-pipe line transportation, and air-brakes in freight car movements are among the new industries that sprang forward in this decade. Rapid expansion of older industries required the investment of many hundreds of millions of dollars of additional savings. Steel, railroad equipment, non-ferrous and ferrous ores, coal, coke, oil, farm equipment, and of course the record-breaking railroad building program, are by no means an all-inclusive list.

Federal fiscal policy might, as the book states, have been deflationary. This policy, however, might have made it possible for private industry to obtain the large sums necessary to finance its extraordinary plant expansion programs. The truth in these matters is difficult to determine.

There may also be some differences of opinion on the relevancy of some of the material examined in the book to an understanding of public financing. The analysis of the presidential campaign of 1932 and the reorganization of government agencies and bureaus in the 1930's are cases in point.

Though its interpretations and judgments are open to doubt, this book is an excellent descriptive and statistical account of the history of public financing and of the growth of the banking system.

JULIUS GRODINSKY

University of Pennsylvania

International Economics

International Economics—Studies. By JACOB VINER. (Glencoe, Illinois: The Free Press. 1951. Pp. 381. $5.00.)

This handsome volume is particularly welcome since many of the papers here reprinted appeared originally in somewhat inaccessible places. It is a collection of essays, addresses, and memoranda written by Professor Viner over a period of nearly thirty years, but mostly since 1943, and it forms an admirable complement to his *Studies in the Theory of International Trade* (New York, 1937) in that it covers the field of international economic policy rather than theory. Of the twenty-five papers included, nine deal with commercial, eight with financial policy, and six with more general topics such as peace, colonies, and the atomic bomb. Only two are strictly theoretical, appraising Taussig's synthesis of the classical doctrine. A trenchant introduction, written specially for this collection, takes issue with the Keynesian influences on international economics. It is critical in tone but, acknowledging as it does the usefulness of income elasticities and propensities, it amounts essentially to a plea for combining the theory of the income-mechanism with that of the traditional price-mechanism of adjustment in international trade and payments. This was probably written before Meade's work on the subject had appeared.

The bulk of the volume is nontechnical. It contains little of the history of doctrine that formed so marked a feature of the *Studies*. It does, however, reproduce two substantial pieces of historical research, one on the most-favored-nation clause, the other on international loans as a tool of balance-of-power diplomacy before 1914. These are the longest papers in the book and certainly among the most valuable. Other articles present Viner's views on policy problems such as the tariff, the gold standard, state trading, the Bretton Woods institutions, dollar diplomacy, and the foreign aid programs of the United States. Most of the papers are addressed to a wider circle than that of professional economists, and the author appears in them with his customary élan as an inveterate foe of national economic planning and an uncompromising free trader. On matters of trade policy he is generally a good deal more categorical here than in his *Studies*, where, after all, he left the theoretical case for free trade in no more than a "state of persuasiveness associated with incomplete demonstration" (*op. cit.*, p. 526).

In his discussion of the International Monetary Fund, Viner comes out in favor of stable, though not invariable, exchange rates (pp. 235, 287) and takes a remarkably lenient view of the scarce currency clause (p. 237). No less than five essays, dated 1945-47, contain a proposal of his for a counter-cyclical international lending agency aimed at stabilizing employment (pp. 298, 322, 334, 340, 361). In a lecture delivered in 1930 he gives the best answer I have seen to Keynes's quip about our being all dead in the long run (p. 110). He shows some interest in the question of world government, on which his remarks are at first—in a wartime essay—sympathetic (p. 266) but later rather sardonic (pp. 304, 381). His strictures against intergovernmental

grants as a permanent institution of international charity are profoundly significant and thought-provoking (pp. 371 ff.). Even those who may not wholly share his nostalgia for the "middle years of the nineteenth century" (pp. 253, 374) will often find themselves agreeing with his judgment.

If I were to make a criticism, it would be of his failure to note the conditions which made the liberal nineteenth-century episode possible—among them the commercial policy of the leader at that time. That policy consisted not in selective and reciprocal tariff reductions, but in a sweeping and unilateral dismantling of the tariff. England made herself dependent on imports for her daily bread, whereas we—it seems—cannot even make ourselves dependent on imports for our Sunday cheese. I am sorry to see Viner writing in one place (p. 352) as if the principle of reciprocity in tariff cuts were somehow a part of the free trade doctrine. Viner would probably be the last person to deny the case for unilateral free trade. The American insistence on the reciprocity principle incidentally rules out tariff adjustment as a means of righting the international balance of payments and compels acquiescence in quantitative restrictions for this purpose. A relatively wealthy and powerful nation, as England was in the middle decades of the last century, can do things that weaker countries—with low reserves, with external deficits, with the terms of trade to worry about or infant industries to protect—cannot so easily do. Some of these essays reveal a disposition to accept "the traditional American pattern of economic isolationism" (p. 285) as something like a datum and to hail the American trade program as a great achievement in comparison with "American history and traditions" (p. 322). While Viner is aware of some of the shortcomings of our trade agreements procedure (pp. 290, 353), there is little or no hint that America's new rôle in the world may call for something more drastic and imaginative in the field of trade policy than the Hull program of limited, selective and reciprocal duty reductions tied to the "Mexican" escape clause. It seems to me a pity that the staunchest and ablest free trader in the United States has addressed himself not so much to this problem as, for example, to censuring the controls of the postwar British economy. I voice this feeling of regret even though the explanations are readily at hand: a book such as this does not aim at completeness or balance, and, besides, two of the papers were written during the author's stay in Britain in 1946, others being doubtless colored by that experience.

There is no short way of giving anything like an adequate idea of the rich and varied contents of this book. It is most of the time an easy book to read and all the time a very lively one. The style is forceful and scintillating, and the substance of the argument infused with a wisdom and humanism that become particularly moving in the essay on "Economic Foundations of International Organization," which brings the whole to a worthy and impressive conclusion. Quite apart from the classroom uses of this volume, economists as well as laymen with an interest in international relations will be grateful for an ample store of profitable and pleasurable reading.

Ragnar Nurkse

Columbia University

United States Economic Policy and International Relations. By RAYMOND F. MIKESELL. Economics Handbook Series. (New York: McGraw-Hill. 1952. Pp. xii, 341. $4.75.)

This book studies the foreign economic policies of this country during the period from 1919 to the present. Its starting point is the emergence of the United States from World War I as the dominant world power, but unready and unwilling to play that rôle. Part I traces its actions, timid and limited, through twenty years of continuing isolation and political irresponsibility. Part II, the major portion of the text, concentrates on the problems and policies raised by our plunge, during and following World War II, into active world leadership.

In terms of the range of topics considered, the book's scope is wide indeed. For students of international affairs, it should prove an extremely useful reference work. Fiscal and monetary policies, international financial cooperation, foreign investment, commercial policy—all come under review. The treatment is always competent and enlightening, sometimes necessarily brief, and sometimes thorough and critical. Space limitations forbid that I comment specifically on more than a few of the major issues raised.

Professor Mikesell performs at the outset a useful function in stressing certain preconditions for vigorous economic action in the international field by the United States. These are: that the American people had first to become accustomed to governmental action in internal economic affairs, and that political leadership had to precede economic leadership abroad. The New Deal showed the connection between government action and levels of domestic employment and income and thus paved the way for active participation in international economic affairs. It was the compulsions of the second World War and of Soviet aggression thereafter that forced the United States to forsake its isolation and step into the international power struggle. The definitive change from isolationism to international responsibility came with the statement of the Truman doctrine, which recognized both the inadequacy of the United Nations machinery to guarantee peace and the determined aggressiveness of the U.S.S.R., as well as the utter insufficiency of early postwar efforts at rehabilitation.

There is an excellent discussion of the problems confronting the International Monetary Fund and of the policies it has adopted. The limited rôle it has played since its inception is attributed mainly to the common underestimation, especially by the Americans, of the magnitude of the postwar disequilibrium. This accounts both for its relatively small resources, sufficient only to cover a mild world dollar shortage, and for the close attention to current operations by its executive board. The struggle between those who would permit automatic use of the Fund's resources, and the Americans, who insist that they shall be applied only to temporary foreign exchange difficulties, has been more or less continuous. (Some moderation of the American position occurred this spring, when in exchange for more stringent repurchase provisions, members were assured of more sympathetic treatment of requests for short-term assistance.)

On the issue of sterling convertibility, Mikesell brings out clearly the

conflict between the principle of pooling reserves and the principle of the IMF and the General Agreement on Tariffs and Trade that restrictions by a country are only justified if it, individually, is in balance-of-payments difficulties. I wish, however, that for the sake of the average reader he had explained clearly and explicitly how sterling convertibility depends upon Britain's export earnings, and what the conditions are which determine the latter.

In his discussion of the Marshall Plan, the author sees clearly the obstacles to the goal of European integration—especially the varying degrees of freedom and control in the different national economies—which make any simple solution via a customs union seem naïve. Within the limits set by strong national interests, he regards gradual progress toward integration as possible, if the United States will encourage it by financial support of a liberalized European Payments Union, by pressing for coordination of European defense industries through the Mutual Defense Program, and by loans and grants to develop European industries.

With respect to the important topic of trade discrimination, Mikesell justifies U.S. opposition (except for transitional difficulties) on the orthodox ground that discrimination perpetuates itself by preventing the transfer of resources and the shifts in trade required to restore international equilibrium. He also goes along in approving the distinction, stressed by U. S. officials, between customs unions and preferential trading, essentially on the ground that the gains under the former are greater. I wonder if the real basis for opposing preferential arrangements, while approving customs unions, is not political or even emotional rather than economic. A girl's suitors dislike her showing *some* preference among their rivals, but their objections cease if her preference becomes complete and ends in matrimony. That is final. So is a customs union. Perhaps, in both cases, it is just the uncertainty that hurts.

The conflict between the farm policy and the foreign trade policy of the United States is clearly stated. Consistency could be achieved, according to Mikesell, if we used price supports and parity payments to combat the distress caused by adverse market conditions only for brief periods. Over the longer term, such subsidies can play a useful rôle only if they follow the trend by helping to transfer resources or to promote efficiency. With this judgment, probably few economists would disagree.

Professor Mikesell gives a sensible though, in my opinion, an incomplete answer to one of our most perplexing dilemmas—how to support economic development in countries whose governments oppose its essential basis, social reform. He would work through the United Nations, which is capable of exercising pressure without arousing such resentment as would any single nation. Certainly the United Nations and its affiliated organizations should be the preferred means, but suppose—what is quite likely—that they too meet frustrating opposition, or that time is too short for this solution? Does not the urgency both of social reform and of economic development warrant a more drastic approach? Should not the United States extend the bilateral Truman doctrine (for the very reasons which underlay its origin) by supporting those governments which are undertaking reform and by helping to power those

groups which will do so? This is intervention, which is a nasty word. But it is not an intolerable and unthinkable means of attaining ends so important as the preservation and strengthening of the free world. A Kemal Ataturk is much to be preferred to a Mao Tse Tung.

P. T. ELLSWORTH

University of Wisconsin

The First Twenty Years of the Bank for International Settlements. By GIUSEPPE UGO PAPI. (Rome: Bancaria. 1951. Pp. 270. L. 1500.)

Professor Papi prepared this volume at the request of the Italian Bankers Association. The treatment is somewhat broader than the title would indicate. Only a relatively small part of the book deals with the operations of the Bank for International Settlements, and the discussion of the operations is sketchy and includes little analysis of the basic problems, either economic or political, faced by the B.I.S.

Part I, "Retrospective," devotes 70 pages to a survey of international financial relations between 1914 and 1932. The account at times seems doctrinaire. For example, the view that "the very conception of an international monetary standard is endangered" unless there is "free importation and exportation of gold, capital, goods, and—for obvious reasons—the services of workers" (p. 34) is setting up an almost unattainable ideal. The idea that a creditor nation should not have a favorable balance of payments on current account (pp. 40-41) ignores the fact that it was common practice even before 1914, and presumably is still sound policy, for international creditors, within limits, to increase their investments in strong and prosperous countries. The suggestion that the Bank of England could have avoided the abandonment of gold in 1931 (p. 63) had the Bank rate "been steeply raised" is an oversimplification of England's crisis. There is, however, one healthy note of realism that runs through the discussion: that lending in itself is no solution of the problem of international economic stability, and that too much attention has been paid to the monetary aspects of international economic problems, and not enough to production, exchange, and commercial policy.

Part II, on "The Work of The Bank For International Settlements" covers less than 60 pages, of which over 15 pages are devoted to a general discussion of the functions of a central bank under the gold standard. The discussion of the activities of the B.I.S., principally its rôle in reparations and in European clearing and payment agreements, gives almost no inkling of the policy issues that have confronted the Bank. There is no critical appraisal of the rôle that the B.I.S. has played in international finance or of the rôle that it can be expected to play in the future. There is only a passing reference (pp. 142-43) to the relation of the Bank to the International Monetary Fund. The book contains a strong plea for international economic cooperation, but it does not come to grips with the question as to just what the B.I.S. can do to further that cooperation.

The longest section is an Appendix of 120 pages, "Bibliography of The

Bank and Cognate Subjects," compiled on the basis of information supplied by the B.I.S., and covering the period 1907-1951. The absence of an index detracts from the usefulness of the book.

FRANK WHITSON FETTER

Northwestern University

Foreign Exchange Equilibrium. By JOHN T. WALTER. (Pittsburgh: University of Pittsburgh Press. 1951. Pp. 178. $4.00.)

In this monograph, the author has attempted to show that, in general, exchange rate stability is preferable to exchange depreciation, and that the latter seldom accomplishes the purpose for which it was intended. In making the case, heavy reliance is, however, placed on the interwar rather than the postwar experience, in spite of the fact that the problems now being attacked through exchange depreciation are entirely different from those faced in the earlier period.

The opening chapters of the book constitute a brief critical review of the various theories relating to domestic prices and exchange rates. The purchasing power parity theory is attacked, principally by showing that overvaluation or undervaluation of the British and French currencies during the period 1926-31 did not produce the expected effects, and hence that a policy of varying exchange rates—and specifically exchange depreciation—will not produce desired results. Incidentally, the opinion is expressed that the pound was undervalued with respect to the dollar from 1926 to 1931—the purchasing power parity rising from $4.97 in 1926 to $5.30 in August 1931.

Exchange depreciation as a policy is then further disparaged. The temporary nature of any export gains that might ensue, the fact that these gains can be obtained only at the expense of some other countries' trade balances (beggar-my-neighbor), and the difficulty of preventing depressions from spreading in any event are all cited as reasons for maintaining a stable currency. Exchange depreciation is also said to be inflationary, to encourage movements of hot money, and to make multilateral trade impossible. As far as can be determined, he objects both to devaluation as a one-shot expedient and to flexible exchange rates of the kind now used by Canada. Finally, exchange shortage is stated to be an indication of poverty; to try to solve that problem through depreciation is "like a program of poor relief based on wage cuts in the hope of developing overtime work opportunities."

On the whole, the argument fails to convince. In part this is because the study is rather disorganized, but chiefly it is because no new statistical material has been introduced, and because theoretical points are frequently made more by assertion than by logical argument. Also, the author attempts to paint with too broad a brush, and to cover difficult technical subjects in a few simple paragraphs, with many of the most elementary (but essential) qualifications omitted. For instance, the assumption seems to be made throughout that a country prices both its exports and imports in its own currency. This, of course, is never completely so, and for many so-called underdeveloped countries, the terms of trade can generally not be influenced by changes in their own exchange rates.

Again the statement that "there is inadequate purchasing power in countries suffering from dollar shortages" is, to say the least, confusing. In the most practical sense of the term, the problem is one of too much puchasing power in such countries.

Finally, for a study published in 1951, the volume pays singularly little attention to the at least partially successful experiments in fluctuating exchange rates, *e.g.*, Canada, Peru, and others, of the last few years, or even the British experience in the middle and late 'thirties. While devaluation can never be the sole solution to a country's balance-of-payments problem, there are certainly circumstances where it is an essential element of the most practical solution, viewed in both political and economic terms.

ROBERT L. SAMMONS

Washington, D.C.

International Monetary Cooperation, 1945-1952. By BRIAN TEW. (New York: Longmans, Green. London: Hutchinson's University Library. 1952. Pp. 180. $2.25; text ed., $1.80.)

This little volume is one of a series under the editorship of Roy F. Harrod and deals with the theory and practice of international monetary cooperation since the war and with the institutions which have developed to promote progress towards a restoration of multilateral payments and, eventually, complete currency convertibility. The author is professor of economics in the University of Nottingham.

The book is divided into three parts. Part I, which deals with the problems of external liquidity and external equilibrium, indicates the origins of exchange controls and multiple currency practices which are still predominantly characteristic of the international payments situation.

Part II is devoted to a discussion of the machinery of European monetary cooperation based on the need for a far greater degree of flexibility than could be attained by bilateral agreements. This need was the motive behind the Agreement on Multilateral Monetary Compensation which came into operation in November 1947 (as a result of the work of the Committee of European Economic Cooperation), with its provisions for "first and second category compensations." Tew indicates the very limited nature of the results. Likewise, the results achieved under the first Intra-European Payments Scheme, which superseded the Monetary Compensation Agreement, were insignificant. The second Intra-European Payments Scheme, which lasted from July 1948 to June 1950, seemed at the outset to be superior to its predecessor, since it provided for a degree of multilateralization of the drawing rights established. It could in actual operation have resulted in a restriction of intra-European trade which it was supposed to facilitate, since any country granting multilateral drawing rights to another would only receive conditional aid if the second country actually used the drawing rights. If the second drew on a third, the third would be entitled to the aid. Hence it would be important for the first country to achieve a surplus at least equal to the drawing rights even if it meant imposing restrictions on imports.

The remainder of Part II dealing with the International Monetary Fund and

the European Payments Union covers the subject matter fairly comprehensively, but it would appear that the author is inclined to underestimate the achievements of the Fund. Undoubtedly, the framers of the Fund Agreement were somewhat over-optimistic regarding the time required for achieving its objective. It must be remembered, however, that the Fund has been operating under difficult conditions, and some Fund members have been more concerned with "getting round" the charter when self-interest dictated. On the other hand, the author, and in this case rightly so, believes that the European Payments Union Agreement and its associated plan for trade liberalization was a laudable attempt to do for the OEEC countries what the IMF and the General Agreement on Tariffs and Trade left undone. The EPU countries now comprise an area in which multilateral settlement is possible and to a high degree automatic. Particularly noteworthy is Tew's illustration of the fact that the effective area of multilateral settlement is broader than that comprised by the OEEC countries themselves.

The book closes with a discussion of the Sterling Area and of the importance of sterling in international settlements. This discussion is somewhat standardized, but there are illuminating illustrations of the manner in which leaks occur in the British exchange control. The author takes the position that devaluation was completely unwarranted.

While all economists will agree that sterling devaluation in 1949 served to stop leaks in British exchange control, not all would subscribe to the contention that the improvement in external liquidity which followed on devaluation was not due to the fact of devaluation but to other factors, such as the American business recovery after mid-1949, the termination of the speculative position which had been built up against sterling (and which was induced by the anticipation of devaluation) and the increase in U. S. government stockpiling. All of those helped, of course, but to attribute the improvement to those factors alone seems unwarranted.

This is a stimulating book. It should prove extremely valuable to teachers and students of international finance. It appears to the reviewer that the "mechanics" of the IMF and the EPU are more clearly illustrated, however, in the tables which appear in the IMF's monthly bulletin, *International Financial Statistics,* than in those which the author constructed for use in the text. One further point needs mention. Books of this nature are necessarily dated. In this case, there is no treatment of the difficulties now confronting the EPU largely as a result of the huge Belgian surplus with the Union. Nor is there any mention of the measures which have been adopted by Britain to tackle the problem of the third dollar-sterling crisis.

John Ryan

Fordham University

Principles of Business and the Federal Law. By Franklin H. Cook. (New York: Macmillan. 1951. Pp. ix, 563. $5.50.)

Principles of Business and the Federal Law is essentially a set of law school casebooks, compressed into 500-odd pages by substituting paraphrases and brief quotations for full texts or lengthy extracts. Its scope is extremely

wide, for it includes the whole Constitution, and the organization follows the plan of that document. Moreover, it includes more than law pertaining to business behavior. The introductory chapter on the distribution of governmental powers under the Constitution is followed by chapters on fiscal powers of the federal government and on limitations on the acts of both federal and state legislatures: contract impairment, the Fourteenth Amendment as applied to regulatory action, racial discrimination, etc. Part II unfolds "due process of law" through its legal history, applications to freedom of speech, labor organization and regulation of the labor contract, and regulation of business practices. Part III does the same for the commerce clause of the Constitution. Part IV deals with laws affecting business enterprise, such as antitrust, patents, unfair competition; Part V with labor legislation; and Parts VI and VII with security and transport regulation respectively.

Since the outline of this book was, so to speak, written in 1787, the teacher of courses in government and business will not easily fit the work to his needs. As the author himself states: "Information on *taxation* will be found in Chapter II on government fiscal power; Chapter III on the impairment clause; Chapter IV on the equal protection clause; Chapter V on the due process clause limiting the taxing power; and Part III, where state taxes as burdens on commerce are discussed. The rights and duties of *labor* are dealt with in Chapter IV, where bargaining representatives are seen to be prohibited from discriminating; in Chapter VI, which explains the rights of labor to picket; in Chapter VII, which expands the rights of labor under the due process clause; in Chapter X, which points out that the commerce power is the basis of modern labor legislation; and finally in Part V, which considers all significant general labor legislation."

Students needing some direct contact with the legal process must still be sent to the original reports or to the casebooks. Because so much is covered in a small space, the speed with which the discussion moves through long time periods is often somewhat bewildering. There is some casual economic analysis, which is not very helpful, and no quotations of, or reference to, any non-legal material.

The book many be useful as a brief reference, for there is hardly an important case which is not at least mentioned. But the disruption of functional lines impairs its value for this purpose. It probably cannot be used as teaching material.

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Industrial Organization; Public Regulation of Business

A Theory of Price Control. By John Kenneth Galbraith. (Cambridge: Harvard University Press. 1952. Pp. vii, 81. $2.00.)

In this well-written and pleasantly temperate little book, Professor Galbraith has set forth a theory of price control. In so doing, he offers a valuable

interpretation of recent American events. To the task he brings a fortunate combination of high level administrative experience, and awareness of the main theoretical issues, a measure of idealism, and an engagingly urbane attitude towards the whole episode.

Price control is a prescription for state action. As such, it is a means to an end—and as a means presumably superior to other alternatives, hence grounded upon theoretical analysis. For Galbraith, the primary end is a stable value of money. This end is threatened by full employment in wartime or during limited mobilization, when inflationary forces are likely to be strong. During war, fiscal-monetary methods are inadequate, and if attempted would threaten the growth of output. Market forces must largely give way to direct controls of an authoritarian type. For limited mobilization, monetary controls are essential, but their effectiveness will be impaired by what he calls the "interaction" of wages and prices. Oligopolistic sellers and powerful unions will raise prices and wages, forcing monetary expansion and general inflation. Price control can check this interaction.

Thus the cardinal assumptions are that full employment will prevail, or must prevail, in both situations; that cost pressure will produce inflation; that price control is preferable to open inflation.

Galbraith makes rationing the key to effective control of a given price. For impure markets, sellers themselves will ration, given their discretionary power over price. Referring to World War II, he notes that these prices proved inherently more stable, making the task of control easier. In markets closer to pure competition, state rationing was necessary. Political forces weakened this rationing, and undermined price control.

Galbraith views wartime price control as a part of what he has called "the disequilibrium system." That system calls for direct resource allocation, excess effective demand at current prices and wages, and general price control. Direct allocation is essential for planned production. Excess demand is requisite to maximum output: every worker finds a market, every entrepreneur a reward. No buffer of unemployed resources exists to police prices and wages. But open inflation cannot be tolerated, and so price control follows. For the system to work, the accumulating unspent cash balances must not exceed a certain margin of tolerance. This margin seems to be a limit beyond which less work will be done, and a flight from money will begin. In essence, the argument is that planned disequilibrium within the margin will yield a more rapid increase of total output than would any other means.

The approach to prices should not be that of a freeze, but one of varying flexibility. It should be tightest for wages and wage-goods, and loosest for military items. It must be buttressed by rationing at strategic points. When hostilities end, price control should be maintained (nothing is said of wages) for a transition period. Here the aim is to preserve the value of the accumulated cash. The promises originally made to the accumulators must be honored in full. To do so requires monetary contraction: large budget surpluses and tight credit policies (higher-interest rates?).

Here Galbraith views the record after VJ day and finds it depressing. The gist of his case is that price ceilings were weakened directly, and the vital

rationing prop was withdrawn. Taxes were cut, credit kept easy, and large public works projects initiated. However, he fails to mention the practical abandonment of wage ceilings within three days of VJ day, which withdrew the keystone of the whole edifice.

Limited mobilization does not call for a disequilibrium system. Diversion of resources is much more limited; so too controls. Monetary equilibrium is now central. Organized sellers can now press their claims with greater equity, and ideological differences concerning types of controls have greater weight. Since full employment is likely and/or desirable, there will be a cost-push from wages, which will disrupt monetary equilibrium. Open inflation follows, and is undesirable. To prevent it, we require short-term price-wage controls, to buttress the monetary equilibrium. Galbraith believes these controls should be selective, to be applied at points of seller strength. However, he considers adoption of such a program to be politically unlikely, and so concedes the necessity for controls across-the-board. In his view, these controls are never attractive in principle, but in emergencies are a price worth paying to prevent inflation.

As an opening generalization, I would say that the book is less a *theory* of price control than it is an interpretation that blends history with *ad hoc* reasoning. The treatment is not general, hence theoretical, in the sense of a refined system of models within which the influence of key variables can be examined. Ends themselves are not really compared, and for any given end the merits of various alternative means are not adequately explored. However, the subject is relatively new, and these things may not be entirely reasonable to ask. Having asked them, I should elaborate.

An adequate theory of price controls ought to consider the *timing* of their introduction. If the shift to war economy begins in depression, at what point, if any, should the controls be imposed, and in what form? If the shift begins in full employment, then should price controls be applied at once, or during, or after reallocation? And again, in what form?

Granted, next, that we want "maximum" production in wartime, overfull employment follows. It also follows that we cannot then have a monetary policy that penalizes strategically situated sellers for uneconomic prices and wages. Instead, we inflate the whole system further, to finance a higher price level without sacrificing production. Here Galbraith calls for concealing the inflation with price control, rather than allowing it to take the open form. His reason is that he fears the effects of inflation (open) upon "the values and amenities of economic life" (p. 9). I agree with him. Yet in all candor price controls do not prevent inflation. They hide it. And in the considered judgment of some economists, price controls, too, threaten the survival of a free society, though in wartime their use might be viewed as a temporary surrender of certain liberties made necessary for the survival of liberty itself.

Yet the place of price controls in a war economy itself is not self-evident. Several questions require investigation. To what extent does the adoption of price control depend upon the extent of the reallocation required? Why is it

preferable, say, to the use of multiple currencies in free markets? Or to one currency, free prices, and direct allocations only?

What is the basis for assuming that price control will probably yield a better economic performance than could be had under open inflation? Does the answer depend upon the probable rate of increase in the price level under open inflation? Or does the issue turn upon incentives? During the war, much was said about "equality of sacrifice." Is there greater equality of sacrifice under price control than in open inflation? Is it true that equality of sacrifice has greater force as an incentive for production than would market-determined rewards (suitably taxed) under free prices?

Consider, next, limited mobilization. Here Galbraith predicts a monetary policy that will yield full employment. To full employment he couples monetary equilibrium. Then he predicts rising wages and prices, citing the "interaction" of wages and prices. What is the cause of this interaction? Is it the "power" of certain sellers, treated as an independent variable? If so, the argument confuses the parts with the whole. To me it is fantastic to say that these selected groups can themselves determine the whole level of prices and wages. If money supply is held constant, the upward push of particular wages and prices will be checked. Either these sellers will experience declining sales and employment (elasticity of demand); or, if they are mainly situated at points of increasing demand because of rearmament, then demands elsewhere must decrease. Either way, a moderate buffer of unemployed resources is created.

To say, therefore, that wages and prices by "interaction" can generate inflation is to confuse an effect with a cause. What the proposition really means is that monetary expansion is to be practiced, to accommodate the aggressive sellers. If so, there will be a general pull of excess demands, which will operate to raise the level of prices and wages all around. The real cause is monetary policy. As the cause, it is a variable for theory, capable of hypothetical manipulation. Political "necessities," if they exist, are irrelevant for analysis. The duty of the economist is to link causes with effects.

Last, if the purpose of price controls is to *keep down* prices and wages during transition to preparedness, they are not likely to work. The imperatives of a wartime society are not there to sustain them. And if by a miracle they were to work, the resulting distortions would make little economic sense.

Galbraith has given us two cases in which he believes price control is desirable: war economy and limited mobilization. There is also a third for which price control is being advocated. Its outlines are now becoming clear, in the year following completion of his manuscript. In deference to its ingenious founders, I shall term it the "Oxford approach," though in this country it has been developed by equally capable politicians, acting either from design or pragmatic opportunism.

The "Oxford approach" has nothing to do with war or limited mobilization. It begins with the idea of perpetual full employment at any cost. It calls for price control as a method for transferring incomes from the relatively unorganized majority to well-organized minorities who are immensely strong

politically—the members of certain favored unions, and, of couse, the farmers. The technique is to control prices in different ways: to hold down some, while pushing up others. This is to be done by state intervention. The policy calls for systematic expansion of money supply. With suitable legislative and administrative exemptions, this draws up farm prices. At the same time, employment is kept full. It also calls for highly virtuous *downward* control of the prices of manufacturers and distributors. This permits some squeezing of profits, which are partially converted to wages for the favored unionists. The transfer is effected by government wage control *upwards*. Government wage-raising is achieved by setting up a wage control board whose task is to rationalize large wage increases, which then acquire patriotic sanction. To this may be added, where necessary, direct coercion of one party to collective bargaining (Presidential attacks on profits plus seizure of the industry).

I humbly suggest that economists interested in price control ought to give thoughtful study to this case, or program, or collection of policies. Investigation might turn up some real dangers to a free society that are lurking in the background.

If all of this were defended simply on the ground that farmers and unionists are better than other people, at least it could be understood and even debated. But the wonder of it all is that the losers themselves seem to favor it. Most of them firmly believe that the program is necessary: (1) to fight inflation (it promotes it); (2) to overcome poverty (it increases it); (3) to obtain more equal incomes (it makes them more unequal). All of which suggests the wisdom of Professor Knight's lament that man is essentially a romantic animal, hence a political one.

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War and Defense Economics. By Jules Bachman, Solomon Fabricant, Martin R. Gainsbrugh, and Emanuel Stein. (New York: Rinehart & Co. 1952. Pp. vii, 458. $4.50.)

This book is a welcome addition to a growing and important literature on economic mobilization problems. There is little doubt that the American people, who have supported the current mobilization program, will insist that the military strength of the United States be maintained so long as powerful threats exist in the world to shatter the peace. Since passage of the Defense Production Act in 1950, the United States has substantially increased procurement of military equipment for authorized forces and has significantly added to industrial capacity to meet production levels required in the event a stepped-up mobilization or full-scale mobilization is forced upon the nation. There is every prospect that world conditions will require that the United States maintain its mobilization readiness base over an extended period of time. Maintaining a high level of readiness over a long period of time creates a whole new series of problems and experiences for the American economy.

In light of past, present, and prospective events both the subject matter

and the treatment of this book are timely and of great significance. Two mobilizations within the past ten years and the outlook of a high-level preparedness program for an indefinite time into the future will undoubtedly make mobilization economics of more important concern to more students of economics.

The book is comparatively short, having about 400 pages of text material. Emphasis is placed on production and inflationary problems. This is because the authors feel that these are the two basic problems which develop in an armament economy. The reviewer shares this view. Seven of the fifteen chapters are devoted to the production problem, including manpower and agricultural issues. Seven chapters are devoted to inflationary, price, wage and rationing problems. The final chapter is concerned with economic warfare.

All the men participating in the study have had intimate contact either in World War II or in the current effort with the problems they treat. Despite a careful editing the volume does reveal in spots the effects of multiple authorship. The outline is clear-cut with the exception of parts of Chapter 2 on "Armament Production Potential" and parts of Chapter 4 on "Maximizing Armament Production." In the judgment of the reviewer a more forceful presentation would have resulted from closer coordination of the two. But these matters are outweighed by the expert handling of the substance of the book.

The analysis of the main topics stresses fundamentals. Problems and issues are capably illustrated with both World War II experience and that of the current mobilization program. Current controls and control problems deserve more emphasis than the authors give them. The interrelationships among present controls, and as between current controls and those of World War II, particularly in the area of production, are not at times entirely clear. Some observations about the longer-range problems of continued mobilization would have been helpful from such a skilled panel of writers. These are essentially matters of emphasis.

The discussion throughout the book is clear, informed and of high quality. The outline on the whole is well planned and covers the subject matter consistently, logically and with purpose. The authors are successful in getting at the basic elements of a problem and in skillfully brushing aside cluttering detail.

This book, in the view of the reviewer, can be used with important effect in general courses dealing with economic problems. It can also serve as a basic text for use in narrower courses dealing solely with war or armament economics. Instructors in the latter area will find here a broad treatment that provides the basis for and guidelines to more detailed class discussion and student research in selected areas. Your reviewer endorses this book for both types of course work. The general reader, too, will find in this book a readable and distilled account of many of the major puzzling problems of mobilization economics.

GEORGE A. STEINER

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Public Utilities; Transportation; Communications

Airline Competition: A Study of the Effects of Competition on the Quality and Price of Airline Service and the Self-Sufficiency of the United States Domestic Airlines. By FREDERICK W. GILL and GILBERT L. BATES. (Boston: Division of Research, Graduate School of Business Administration, Harvard University. 1949. Pp. xv, 704. $5.75.)

Federal Control of Entry into Air Transporation. By LUCILE SHEPPARD KEYES. (Cambridge: Harvard University Press. 1951. Pp. 405. $6.00.)

A well-reasoned factual analysis of the oligopolistic competition which characterizes the regulated air transport industry should be of interest to transport economists as well as to those concerned with the functioning of competition in the American economy. The study of Gill and Bates is admirable in its thoroughness, organization, and careful attention to detail. That such an investigation of competition could be made at all is due to the fact that the details of the actions, revenues, and costs of the airlines are matters of public record. The authors, who have made good use of the readily accessible materials, undertake to examine the effects of competition among airlines upon the quality of service, the fares, and the financial self-sufficiency of airlines. The authors do not draw upon, nor do they even make reference to, the extensive economic literature on competition. To them competition means broadly that two or more airlines serve the same routes or pairs of cities and that each strives to increase the numbers of passengers carried by altering the quality of service offered, or the rates charged, or both. Thus, by examining the air route pattern of the United States, the changes in it, and by relating competitiveness in their sense to observed changes in quality and fares, the authors are able to determine the effects of airline competition. They conclude that competition has been an important factor in leading to the use of improved types of aircraft, in resulting generally in higher standards of schedule service and especially of in-flight and ground services to passengers. They similarly find that competition has held a marked influence upon fares. While the three chapters on fares are carefully done and the abundant data are well handled, the analysis is quite devoid of any investigation of the pattern of demand, as well as of any use of the well-tried concepts and analytical apparatus of economics.

If competition lowers fares and improves service, it also may diminish revenues and increase costs. Thus under certain conditions competition has resulted in the failure of some airlines to achieve the financial self-sufficiency which has been one of the goals of public policy. Competition among more than two carriers is found by Gill and Bates to be a special cause of weakness.

On the whole, *Airline Competition* is an excellent and thorough treatment of its subject. A deliberate though significant omission is the impact of competition from the non-scheduled airlines upon the industry as a whole. Furthermore, Gill and Bates confine themselves to passenger service. In their discussion of the effects of competition upon the purchase of new aircraft,

they do not give sufficient emphasis to competition among the producers of aircraft. And while the authors take account of the expansion of air transportation, it may be that the further growth of the industry will result in softening the unfavorable impact of competition upon airline self-sufficiency.

If Gill and Bates quite unnecessarily avoid the use of economic theory in their investigations, Mrs. Keyes' *Federal Control of Entry into Air Transportation* goes perhaps too far in the opposite direction. Her book offers scant comfort to such persons as airline lawyers seeking new and different economic points and theses to incorporate into arguments presented to the Civil Aeronautics Board. Nor will the Board find much guidance from her book, because her policy recommendations go far beyond the present scope of the Board's legal authority. Economists, however, should welcome her attempt to apply criteria of welfare economics to the airline industry, one small enough, new enough, and transparent enough to be a good field of application.

Mrs. Keyes' first two chapters develop her theoretical groundwork, which is an abstract discussion of the conditions of optimum investment in an industry under long-run static equilibrium. It is highly questionable if this analysis is very relevant to a rapidly growing industry with a changing technology. The next four chapters review the regulatory policy affecting the airlines. Mrs. Keyes finds, for example, that ". . . the Civil Aeronautics Board has not set up any particular value of the Triffinian coefficients as an ideal condition to be aimed at, nor has it directly attempted to bring about an 'economic optimum' in terms of total investment in the production of any particular product or in terms of distribution of investment among firms" (p. 307). In her two chapters of conclusions Mrs. Keyes seeks to show the modifications in public policy required to meet her static conception of the optimum investment in air transport. A little less attention to niceties of theory and more concern with the art of the possible would have improved her book.

D. S. Watson

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The Power Policy of Maine. By Lincoln Smith. (Berkeley and Los Angeles: University of California Press. 1951. Pp. vi, 344. $5.00.)

Lincoln Smith's book is not a usual study of a state's efforts to regulate its electric utilities but is rather a study of the physical and peculiar institutional aspects of Maine's power policy. The cornerstone of Maine's policy is the Fernald Law considered by the citizens of Maine (according to the author) to be almost as sacred as the Monroe Doctrine and the Gettysburg Address. This law, of doubtful constitutionality, prohibits corporations from transmitting hydro-electric power beyond the boundaries of the state. It reflects the basic sentiment of the Maine people, expressed as early as 1621 in the interestingly named "Great Ponds Ordinance," that the water power resources of the state are the property of the people and should be exploited en-

tirely for their benefit. It is necessary to point out that this does not mean development through public ownership, either state or federal. The exact opposite is the case; conservative Maine believes strongly in private ownership and operation.

That the people of Maine have placed a somewhat too high value upon this resource is apparent from Smith's book. Maine has over half the hydroelectric resources of New England but it has far from its proportional share of industry. Whatever value Maine's power resources might have, they certainly have not, as yet, been sufficient to attract even those few industries which are large users of electricity. The citizenry have presumably failed to realize that the cost of generation is a comparatively small part of the total cost of power and the cost of power is in turn a comparatively small part of the cost of manufacturing. Nor have they fully appreciated the economics of hydroelectric power production under conditions of variable stream flow. Furthermore, there seems to be some evidence that the law has actually restricted the industrial development of the state since the power companies, prohibited from selling the dump power that would have been developed, have been reluctant to develop the remaining hydro resources. It is also interesting to note that the power companies, which originally fought the Fernald Law, have now found it a shield and a bulwark since the law by prohibiting interstate transmission has limited the jurisdiction of the Federal Power Commission.

Passamaquoddy and rural electrification both presented challenges to Maine's traditional policy. Passamaquoddy failed because of its inherent economic limitations rather than because of its inability to fit into the institutional pattern. The Rural Electrification Administration cooperatives were not enthusiastically received by the conservative Maine folk, and publicly developed hydro power offered no solution to the problems of rural electrification.

The book is a good analysis of the unique power policies of a single state but it is burdened excessively with detail that could interest only a state historian. On the other hand, it would be interesting to know more about the other important phases of power development and utilization in Maine—the efficacy of regulation, the impact of the fair value rule (Smyth *vs.* Ames is not mentioned), the quality of the job done by the privately owned utilities and the complete story of the Insull dominated power companies that are but dim shadows in the background of the story.

However, the writer drives his analysis into an even broader field—the field of regional development of which, on a lower scale, the Fernald Law is the antithesis. There are convincing arguments for integrated resource utilization and economic development of the state carried out as part of a regional plan. The TVA and Columbia River project lend concrete reality to such plans and there is considerable intellectual support of regionalism of one kind or another. It remains questionable, however, whether regionalism can develop roots among the people, particularly the people of Maine. As Smith so well shows, the admirable and rugged individualism of the people of Maine are institutions to be reckoned with.

Eli Winston Clemens

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Land for Tomorrow—The Underdeveloped World. By L. DUDLEY STAMP. (Bloomington: Indiana University Press. New York: American Geographical Society. 1952. Pp. 230. $4.00.)

Based on the Patten Foundation Lectures delivered at Indiana University in 1950, *Land for Tomorrow* outlines the views of a noted English geographer. This book, however, is not written for the geographer, and less for the economist; the author addresses himself to the layman. With the aid of maps, charts and tables, Professor Stamp touches and comments upon various "land-food-people" problems.

Questioning the usual meaning of "underdeveloped" as it is widely applied to various lands, the author sets out to appraise the current and prospective balance between people and food. In a brief sketch of The World's Peoples, he presents, couched in popular language, such broad generalizations as these: that in the postwar birth explosion Americans were having as many babies as Asiatic Indians, most of whom are not familiar with birth control; that due to our higher survival rate, our population is expanding at a greater rate than India's "teeming millions"; that the high rates of population increase are not in India and China or in crowded parts of Europe, but in the Americas; that English-speaking whites are increasing four times as rapidly as the peoples of the world as a whole.

A descriptive inventory of The World's Lands marks out the currently habitable areas and reviews the land resources of the several broad climatic regions of the world. The author then considers the "carrying capacity of the world's lands." Here Stamp is directly confronted with economic questions, but he sidesteps them and continues to be interested primarily in physical relations. He says, ". . . we are faced with two entirely different questions. The first is the maximum number of people which a square mile of productive land can support in terms of food. The second is the population needed to secure maximum production with maximum efficiency. The first may be of the order of 640—one person per acre—but the second will be hotly disputed according to views as to what constitutes efficiency in agriculture."

Thus the author encounters the problems of defining and measuring efficiency. In Food For All he says, ". . . one approach regards efficiency as indicated by output per unit area, the other measures efficiency in terms of the output of labor, that is per man hour. . . . In a world short of food it is surely clear that what matters is the actual amount of food produced, so, making some allowance for quality, the higher the output per unit area the greater the efficiency of the farmer." Thus resolving the problems of defining and measuring efficiency, he reaches what he considers significant conclusions: "If output per unit area is taken as the criterion, and we bear in mind the huge world family and its present need for food, maximum agricultural efficiency is exemplified in selected delta regions of China, in Java, and northwestern Europe. We have seen how climatic conditions often work against the farmer in the tropics. We should rather look for universally high yields per acre in the favored temperate-zone climates. Does this not point to the fact that with our present knowledge of agricultural production and of soil management, our present range of crops and of world food demands, the outstandingly under-

developed countries of the world are the new lands of the middle latitudes, including United States, Argentina, and Canada? Is there any scientific reason why output per acre in these areas should not be brought up to northwest European levels?" This quotation, which may jar some readers, is from the section The Underdeveloped United States in which, however, the author does not suggest that "reverse point four" technical missions be sent from other lands to this country.

In Salvaging the Old World, Stamp emphasizes the need for more complete land use information to be acquired by detailed surveys which can serve as a basis for action programs. Also he stresses that each country has its own problems, many of which are not to be solved by techniques developed for conditions in other lands. In Preserving the New World, he again stresses the danger of a wholesale transfer of our midlatitude experience and thinking to different conditions such as those found in the tropics. This pertains especially to soil erosion for which our record, he says, is not enviable and the control of which he lists as the foremost line of development necessary in preserving the new world.

Although less extreme and less of an alarmist than some contemporary Neo-Malthusians, the author's views have much in common with that school. Recognizing that his experience is that of a geographer, one may nevertheless wonder why he pays so little attention to the economics of the problems considered; either he is not familiar with what economics can contribute, or he has strong doubts whether it now can contribute significantly if at all. But the reader may wish to counterbalance the lack of economic analysis in this book by supplementing it with material as in "The Economics of Development" in Jacob Viner's *Lectures on the Theory of International Trade* (mimeographed in English; published in Portuguese translation, *Revista Brasileira De Economia,* V (2), June 1951).

SIDNEY HOOS

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The Economics of New England—Case Study of an Older Area. By SEYMOUR E. HARRIS. (Cambridge: Harvard University Press. 1952. Pp. xvii, 317. $4.75.)

The New England Economy, a Report to the President Transmitting a Study Initiated by the Council of Economic Advisers and Prepared by its Committee on the New England Economy. (Washington: Supt. Docs. 1951. Pp. xxxvi, 205.)

The attention given the New England economy in recent years is exceeded only by that accorded the South. There have been a number of investigations of particular phases of the New England economy by state agencies and legislative commissions, by Congressional committees, and by private organizations, particularly the Boston Federal Reserve Bank. University studies, especially at Harvard, recently have contributed significantly to the knowledge of the area. A comprehensive study sponsored by the National Planning Association will shortly be completed.

The Committee on the New England Economy was set up in the spring of 1950 by the Council of Economic Advisers to determine why the area was hit so hard by the 1948-49 recession, and to examine the region's basic economic structure. Professor Harris was a member of the Committee and has served on a number of other projects concerning the New England economy. His book and the CNEE report cover much of the same ground, and readers will find it useful to read the two together.

What are the difficulties which have elicited all this attention? Both Harris and the CNEE say that the main problem arises from the fact that New England is the country's oldest industrial area and that it faces substantial problems of adaption to technological changes, development of new competitive areas, and the shifting of markets. The New England economic situation is sometimes pessimistically summed up by comparing it with that of the United Kingdom—the mutual characteristics being highly industrialized economies resting heavily on exports, old industries handicapped by obsolescent plant, equipment, and industrial techniques, unprogressive industrial and union management, aggressive competition from younger regions, and adverse trade balances and pressure on monetary reserves.

This is the darker side of the picture. On the other hand, both reports emphasize that the region is not in desperate economic straits. It is not generally poverty-stricken; average per capita income payments in the New England states still considerably exceed the national average, although the differential has narrowed in the past few years. Although the area was severely hit in 1948-49, its economy was more stable in the 1920's and 1930's than that of the country at large. It possesses great advantages in its highly skilled labor force, proximity to a large sector of the American market, and access to ocean shipping.

One problem of analyzing the regional economy is due to its heterogeneity. Connecticut is highly industrialized, oriented more toward the middle Atlantic states than toward the rest of New England, and with respect to income payments per capita is consistently in the top decile of all the states. Vermont, New Hampshire and Maine depend more on tertiary industries, and their average income payments per capita are well below the national average. Particular areas, particular cities and particular industries have their own special problems, so that it is difficult to generalize concerning many of the economic difficulties or to prescribe general remedies. They can be attacked only by specific studies and by locally initiated action.

But some generalizations are possible. Both reports point out that the region, while it has no great competitive handicap, suffers from the combination of a number of small handicaps, including the following.

1. High-cost power, which raises manufacturing costs and prevents the development of industries (such as aluminum reduction) using large amounts of power.

2. Lack of raw materials—New England incurs a heavy interregional deficit because of the necessity for buying and transporting raw materials. This disadvantage may be offset to some extent by New England ownership of raw material sources elsewhere.

3. High freight costs of raw materials shipped into the region and finished products shipped out. This disadvantage may be increased, at least in the short run, by the abolition of the basing-point system. But it is offset to some extent by the region's proximity to large markets and access to ocean shipping.

4. High labor costs in some industries. This appears to be one of the difficulties in textiles and shoes, resulting partly from the resistance of workers to measures to increase output even where no increase in effort is required. However, labor costs in other industries are relatively low, for instance in white collar jobs and in the highly skilled metal working trades.

5. Worsening terms of trade since the 1920's and 1930's, mainly because of the increase in raw material (including agricultural) prices relative to other prices.

6. Shortages of investment funds. This problem has several aspects. Capital funds are largely controlled by banks, trusts and insurance companies, who hesitate to take risks in any case and who tend to regard New England investment as risky. There is none of the speculative exuberance of the areas where money comes easily, as in the oil-, wheat- and cattle-rich Southwest. Another difficulty: many firms, particularly in the dwindling industries, have been withdrawing capital for distribution to owners and managers and for investment elsewhere, instead of plowing it back by modernizing and expanding plant and equipment. Finally, although the area contributed notably to the war effort, it obtained a disproportionately small share of government-built plants.

7. High taxes and badly constructed tax structures are alleged to be a handicap in some states. Massachusetts corporate income and other corporate taxes are particularly heavy. Both reports hold that in general the regional tax systems weigh too heavily on costs and not enough on surpluses. But compared with tax systems of states like Illinois and Ohio, they do not weigh heavily on consumption.

8. The picture respecting management is unclear, though there is an impression that New England management, at least in the older industries, is less imaginative and responsive to new ideas than in some competing areas.

Particularly interesting are the discussions of the balance of payments and the drain of the region's reserves believed to have occurred over the last decade and to be still continuing. Much of this discussion is based on Penelope Hartland's dissertation, *Balance of Interregional Payments of New England*. Miss Hartland's figures are necessarily highly speculative and Harris' results from extrapolating from her 1939 figures are even more speculative, as the author recognizes. But the approach deserves more attention in other regional studies than it has thus far received.

The region's deficit balance with the federal government has contributed heavily to the adverse balance of payments. One reason for the size of the discrepancy between regional payments to the federal government and federal payments to the region is the resistance of many New Englanders to federal assistance and federal projects; another, the strongly Republican cast of the region during the last two decades of Democratic administration; a third,

the strategic weakness of the regional Congressional delegation and its failure, resulting partly from partisanship and diverse interests, to work together in promoting regional interests. The federal government, Harris notes, tends to pour funds into low-income areas and debtor areas, but not into areas suffering from economic arteriosclerosis.

Recommendations: no startling innovations are offered. Some of the recommendations are (inevitably) controversial and some are of the sort which cannot well be left out but which are so general as to be of little help except to focus attention upon special problems—like the recommendation for improved labor-management relations (how obtain them?). Among the prescriptions are the following.

To improve markets and facilitate industrial location—gather more knowledge of the region's potentials (census of industries), promote "job-opportunity evaluations by responsible local groups" (CNEE report), improve federal employment exchanges and increase labor mobility by relocation subsidies.

To lower production costs—provide technical and managerial assistance to small firms (a county agent system for small business), encourage labor-management cooperation to increase productivity (and better relations generally), re-examine freight rate structures and New England's transportation facilities, study power costs and potentialities of multi-purpose river development projects, establish a New England steel plant and possibly other metal-refining industries.

To encourage investment—ease restrictions on bank and insurance funds and encourage new forms of investment institutions (like the Maine Development Corporation) which can tap such funds, encourage community foundation plans, put more emphasis on "nonbusiness" and less on "business" taxes, allow accelerated depreciation, stop double taxation of dividends.

To improve the region's relative position—adopt uniform federal standards of working conditions and social services, exploit federal programs which might "contribute toward higher regional living standards." (The last is from the CNEE report. Harris is blunter: reconsider regional attitudes, seek a "fair share" of federal outlays to help redress the adverse balance of payments.)

While the Harris book and the CNEE report overlap to a considerable extent, each treats many topics more fully and with different emphasis than the other. Harris' study is farther ranging and more provocative, but throws together much undigested material; the analysis and conclusions of the CNEE report are more closely reasoned, and the report is better edited and easier to read.

Many criticisms may be made on both reports despite their generally high quality. To this reviewer, the treatment of tax and fiscal problems is the least satisfactory part of either report. Data are used incautiously; for instance, comparisons of Boston's expenditures and revenues with those of other municipalities take no account of the variation in the functions performed by overlying jurisdictions, including the state, in different municipalities. The city of Boston, for instance, performs functions which in other municipalities may be handled by county governments, school districts, sanitation districts

and so forth. However, many other sources confirm the conclusion that excessive use of the property tax has virtually halted construction in Boston and has contributed greatly to the stagnation of the Boston area.

The CNEE report states (p. 126) that the average cost of unemployment insurance in New England in 1949 was 3.7 per cent of taxable wages (more for some states), whereas the maximum unemployment insurance tax rate is 3 per cent.

Harris says that the absolute level of Massachusetts taxes is high and a reason for concern (p. 207), then proceeds to show that the per capita figure for 1950 was lower, both absolutely and as a percentage of income payments, than the average of all the states.

The recommendation that taxes be changed to weigh more heavily upon "surpluses" and less on costs is not spelled out, and no attention is given to the difficulty of defining an "economic surplus" for purposes of taxation. What is implied, of course, is greater dependence on corporate and personal income taxes, but are not these as likely to have adverse repercussions upon business decisions (businessmen's attitudes being what they are) as taxes on costs or on consumption?

The CNEE recommendation to allow accelerated depreciation is highly controversial, but in view of the increasing number of extractive industries which are allowed percentage depletion, some such move may be called for, if only to forestall a demand for analogous percentage depreciation allowances which would allow firms to charge off more than the cost or replacement value of depreciable assets.

Carrying out the CNEE recommendation to stop double taxation of dividends awaits some solution to the whole problem of integrating corporate and personal income taxes. To those who have wrestled with the problem, it is a bit startling to see the suggestion tossed out so casually with no apparent recognition of the difficulties involved, and no concrete alternative suggestions.

LYLE C. FITCH

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Government and Labor in the United States. By JOHN H. LEEK. (New York: Rinehart. 1952. Pp. viii, 336. $3.00.)

This is the latest of over a dozen volumes in the "American Government in Action" series intended apparently, without too many academic trappings, to appeal to the intelligent general reader and to the browsing undergraduate who longs for a change from a textbook diet. There is a classified bibliography of some twenty pages at the end, and a list of cases cited, all of which we assume that the author has read carefully and can vouch for unqualifiedly. Occasionally, as a test of the reader's alertness, the writer refers by name in the text itself to a case that has previously been cited only in the footnotes; and sometimes for local color or in the absence of the official documents he does not disdain to cite as an authority some middle-western newspaper or *Time* magazine.

Since the viewpoint of the series as a whole is primarily that of political

science and Professor Leek's own chief interest is evidently in the constitutional aspects of labor legislation rather than in political forces or legislative processes, we cannot expect too much in the way of economic history or principles. Indeed, the preliminary sketch of the rise of unionism in America is confined, as is all too customary in such summaries, too largely to the succession of national federations, to the neglect of the great craft or industrial unions where the real business of the movement is done, and withal it is none too accurate. One can hardly use the word "contemporaries" to describe the National Labor Union of the late 1860's which met an early death by 1872 and the Knights of Labor which had its principal growth in the late 'seventies and 'eighties. There is some confusion among the Gould roads involved in the strike of 1886. It is not advisable to mention the American Railway Union of 1894 and the American Federation of Labor in the same breath as though they were equals. The importance of the metal miners in the formation of the I.W.W. is not recognized. The beginnings of the C.I.O. are veiled in obscurity, and the middle initial does not necessarily imply "industry-wide" bargaining but only plant-wide or company-wide, including all grades, as in the automobile industry. There may be grim humor in the statement that John Lewis and his coal miners could get along very well without government aid in organizing, when they have been subject to such heavy penalties for violations of court orders; and the author fails to make it clear that the second series of fines against them in the spring of 1948 was ultimately rescinded.

But once he gets properly launched in his own channel and has plain sailing ahead, Leek gives us a good evolutionary record of increasing governmental regulation of working conditions and of labor organizations, and of the vicissitudes which such legislation has had to meet in the courts. We shall understand better than before how frequently state laws upon a particular subject or those relating to a single industry, like the Railway Labor Act of 1926, have served as experiments or an entering wedge and how the federal government, through the use of the taxing power, or a 50-50 arrangement as to expenditure, or through a liberalized interpretation of the interstate commerce clause, has been able to exert pressure upon recalcitrant states and interests and bring about a national system, not always uniform but meeting certain minimum standards. We are much more of a nation in labor matters than we were less than twenty years ago.

Partly because times have changed, the order of topics here is quite different from that in Commons and Andrews' book upon which many of us were raised. Instead of beginning with hours of labor and wages and industrial health and safety, Leek devotes most of the first half of his book to legislation and court decisions as to collective bargaining and union activities: the trust laws and the Clayton Act, the Railway Labor Acts of 1926 and 1934, the Norris LaGuardia Act of 1932, the Wagner Act, and state laws curbing the unions, culminating in the Taft-Hartley Act of 1947. Some might say that provisions for the settlement of labor disputes, so closely allied to collective bargaining, should also come in this first part, but the author chooses to put them next to the last, and the discussion of labor

politics and the administration of labor laws at the very end. Unionism and collective bargaining are more and more the real labor problem and the one exciting the most controversy.

The names of cases and of laws, such as the Walsh-Healey Act of 1936, intended to salvage something from the lamented N.R.A. and to salve the wounded pride of its chief sponsor, or the Wagner-Peyser Act of 1933 which made a beginning toward a joint system of public employment exchanges, and others of like nature, might have been more precisely given throughout. It is doubtless unfortunate that we have formed the habit of tagging a measure with the names of the men in each house of Congress who have introduced it, and that this not only fails to identify its contents but leads to confusion when the real title is given. We may not realize that the Taft-Hartley Act and the Labor-Management Relations Act are one and the same thing; and some of the demand for the repeal of the law, instead of its possible amendment, arises from party or even personal prejudice. The terminology of social security provisions is also rather baffling. Quite early in the book Leek seems to confuse the "assistance" features of the act with those relating to what are often called pensions (p. 16). The dictionary definition does not seem to require that pensions shall be either contributory or non-contributory. The statue would seem to be scientifically correct, as the author indicates, in calling the contributory part of the system "old age and survivors' *insurance*," except that the beneficiary pays during his working life for only half of the cost. If we assume that there is an advantage to the employer in having such a retirement plan, we may regard his share of the expense as payment for this benefit or as deferred wages and still keep within the definition. Where, as in the case of workmen's compensation for accidents and occupational diseases and that of unemployment compensation, there is no contribution in money made by the recipient, it may be argued that the limited payments made under the laws involve an indirect or negative contribution from him also. When and if health insurance for all, which Leek evidently favors, comes to be a part of the system, it may be a good time to put everything on a more liberal and at the same time a contributory basis. Then it will really be social insurance.

Of the different methods of settling labor disputes, the author probably does not intend to differentiate what he calls "compulsory delay" from the Colorado and Canadian plan of compulsory investigation which he discusses further on. Doubtless, because of its recent use on a trial and error basis in the steel strike and its much longer history in the railroad industry, he should add government seizure as a sixth method to his list, incorporating what he says in the chapter on the "Government as an Employer" as to the prohibition of strikes against the government. Most labor economists would surely agree with him in saying that there had been too much interference from the more purely political branch of the government with the operation of the Railway Labor Act, and the same might well be said about the use or non-use of the Taft-Hartley Act.

Warren B. Catlin

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Contemporary Collective Bargaining. By HAROLD W. DAVEY. (New York: Prentice-Hall. 1951. Pp. xii, 532. $5.50.)

Professor Davey's textbook is a digest of the latest available material on contemporary collective bargaining, supplemented by his own interpretations, reflecting both his study of and participation in this particular area. The book will serve the purpose of most courses in collective bargaining designed to acquaint students with the material, issues, and problems of collective bargaining.

Davey carefully covers the issues and problems which arise in the negotiation of the collective bargaining agreement, including the bargaining unit, the content of the collective bargaining contract, the procedures employed in achieving the final settlement of the issues, the effect of collective bargaining on our economy, and the impact of public policy on collective bargaining. At appropriate places he brings into the discussion some of the most "fundamental economic and political questions" which arise in "a highly unionized economy" toward which, in his opinion, we are heading. There is an awareness that at the present time we do not have the answers to the problems arising in such an economy, and it is to Davey's credit that he repeatedly raises these questions throughout the book. In essence these questions revolve around one basic question: can we, in our highly complex society, with its concern about unemployment, still maintain free collective bargaining? Is free collective bargaining an economic anachronism?

There are, however, three criticisms that might be made of the book. First, while attempting to present all of the latest material and writings in the field of collective bargaining, Davey does not leave the reader with any frame of reference with which to approach the problems of collective bargaining. One must concede, however, that textbooks written with a so-called frame of reference, on a level which is operational, are usually considered too difficult by students and may be unsatisfactory for undergraduates.

Second, though some skepticism over the application of what is frequently (but incorrectly) referred to as "pure economic theory" to the study of unionism and wages is desirable, economic analysis is still extremely useful. Davey expresses extreme skepticism (if not outright rejection). But one notes, for example, that in his listing of factors which are of importance to unions and management in the formulation of their wage proposals, there are set forth certain specific economic factors, the understanding of which would require a thorough training in economic analysis. I recall Professor Schumpeter's admonition in a lecture at the University of Buffalo in 1948 on the so-called "marginalist controversy" that (to paraphrase his remarks) "the knowledge of economic theory may not be much of an ally, but the lack of it can be a hell of an enemy."

Third, the author assumes that in the United States today there is a "firm acceptance of collective bargaining as a method of industrial government." Many students of labor express this opinion. Many trade union leaders express the opposite opinion. Whether there is "firm acceptance of collective bargaining" on the part of management is certainly a debatable

question. For example, a recent report (the first of a series) of the Senate Committee on Labor and Public Welfare on *Labor-Management Relations in the Southern Textile Industry* certainly indicates resistance to unionism and collective bargaining on the part of management. The important point is that trade union leaders deny Davey's assumption. The issues and problems of collective bargaining must be studied in terms of what the parties *believe* to be true, since their beliefs will determine their actions and attitudes.

The reviewer realizes that these criticisms may be considered by some professors of industrial relations as virtues. But they are offered simply to explain the type of textbook that Davey has written. I am sure that the book will rate high in the list of acceptable textbooks in the field of collective bargaining, particularly for undergraduate students.

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Population; Social Welfare and Living Standards

How Much Does It Cost? A Report to the Michigan Employment Security Commission on Long-Range Financing and Fund Solvency in Michigan. By WILLIAM HABER, with the collaboration of the Michigan Employment Security Commission and the U.S. Bureau of Employment Security. (Ann Arbor: Author, Univ. of Michigan. September, 1951. Pp. xi, 368.)

The purpose of this report is to estimate, for 1951-60, costs likely to be incurred by the Michigan unemployment insurance system, and the size of an adequate reserve. This is no simple task, for future economic events are uncertain, and Michigan, an industrial state, is highly sensitive to business fluctuations. Moreover, provisions of the state's Unemployment Compensation Act are complex and likely to be amended. Yet a remarkably satisfactory job has been done. In this achievement, Haber was aided substantially by his collaborators, as he fully acknowledges (p. vi). Michael T. Wermel, of the U. S. Bureau of Employment, is mainly responsible for the basic concepts on benefit financing, and the Bureau furnished actuarial calculations. Daniel B. Suits prepared the economic projections used in estimating cost. Martin A. Cohen, of the Michigan Employment Security Commission's staff, collaborated on the comprehensive description of the Michigan economy (Part II, Ch. 1-11). The Commission provided much of the basic data (Parts I and II contain 125 tables), and prepared the 39 charts. Its interesting study of claimants exhausting their unemployment benefits in the first seven months of 1949 constitutes Part III, an appendix.

Cost and reserve estimates developed in Chapters 6-9 of Part I comprise the essence of the report. Five alternative business cycle patterns are formulated for 1951-60, ranging from the "most favorable," with persistently high employment assumed, to the "most unfavorable," which posits 20 per cent

of the labor force as the probable upper limit of unemployment. To the reviewer, this modest upper limit seems optimistic. These projections are not predictions, but represent the probable range of types of fluctuations, and of fluctuations within each type. Patterns for Michigan take into account defense production and the possible range of national unemployment.

In addition to the current law, ten alternative legislative patterns are assumed. These involve mainly combinations of possible changes in the amount and duration of benefits. Given these economic and legislative assumptions, a basic formula is derived for estimating the cost rate, *i.e.*, benefits as a per cent of taxable wages. The cost rate indicates the percentage levy on aggregate taxable payrolls necessary to meet estimated benefit obligations. Derivation of the formula $\left(\frac{\text{average weekly benefit amount}}{\text{average weekly taxable wage}} \text{ times } \frac{\text{average compensable unemployment}}{\text{average covered employment}}\right)$ is described in the technical appendix to Chapter 8. Cost rates are estimated for postwar years, and 100 average cost rates are estimated for 1951-60 on the basis of economic and legislative assumptions.

A self-sustaining unemployment insurance system can utilize the reserve to reduce yearly variations in the tax rate. To accomplish this, the author urges use of a level annual tax rate over a period of years to minimize the need for forecasting. Under median economic assumptions, the existing Michigan reserve, estimated to equal from 3.5 to over 4 average years of benefit expenditures for all legislative patterns, is deemed adequate, but not excessive. Given the economic and legislative patterns to be followed, the necessary tax rate to maintain the reserve over 1951-60, after allowing for interest earned and contingencies, can be computed easily. The procedure is described in Chapter 9. However, $Xi = X_1 + X_2 + X_3$, not $X_1 \div X_2 \div X_3$ (p. 121).

Limits of space prevent adequate consideration of many chapters in Parts I and II providing necessary background material. Those in Part I deserve special mention for the clear picture they give of Michigan's industrial concentration, labor force, employment fluctuations and shifts, leading industries, problem areas, and major labor markets. The report is timely, and because of its findings and techniques, should prove valuable not only to Michigan, but to many other states interested in this problem.

Roy C. Cave

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TITLES OF NEW BOOKS

Economic Theory; General Economics

BAUMOL, W. J. *Welfare economics and the theory of the state.* (Cambridge: Harvard Univ. Press, for the London School of Economics and Pol. Science. 1952. Pp. vii, 171. $4.25.)

CAPET, M. F. *L'interaction des marchés: la liaison horizontale.* Pub. de Centre d'Etudes Economiques. (Paris: Lib. Armand Colin. 1952. Pp. 199. 750 fr.)

FERNANDEZ, F. *La jornada—teoria del valor economico.* (Madrid: Edit. Dossat. 1952. Pp. 268.)

HALEY, B. F., editor. *A survey of contemporary economics.* (Homewood, Ill.: Richard D. Irwin. 1952. Pp. xvi, 474. $5.)

KOKKALIS, A. *Why is the theory of labor the only fundamental and exact economic theory?* With an open letter to President Truman. (Concord, N.H.: Evans Printing Co. 1952. Pp. 56. $1.60.)

MEYER-LINDEMANN, H. U. *Typologie der theorien des industriestandartes.* (Bremen-Horn: Walter Dorn Verlag. 1951. Pp. 240.)

NORRIS, R. T. *The theory of consumer's demand.* Rev. ed. (New Haven: Yale Univ. Press. 1952. Pp. xiv, 237. $3.75.)

The first edition of this book appeared in 1941. In the present edition, the principal addition has been a chapter, "Marginal Utility Analysis Reconsidered," in which the author considers "grounds for questioning the negative inclination which orthodox theory has generally posited for the marginal utility of money income."

SOULE, G. *Ideas of the great economists.* (New York: Viking Press. 1952. Pp. vi, 218. $3.50.)

A concise and interestingly written summary, probably most useful for the general reader or as collateral reading in an undergraduate course in economic theory. Except for a very brief statement with regard to earlier thought, the period covered begins with the mercantilists and includes Commons, Mitchell and Keynes. There is a final chapter on "The Use of Ideas."

SMULDERS, M. F. *Inkomensverdeling en werkgelegenheid.* Capita selecta der econ. xv. (Leiden: H. E. Stenfert Kroese. 1952. Pp. xiv, 174. f. 9.75.)

SPIEGEL, H. W., editor. *The development of economic thought—great economists in perspective.* (New York: John Wiley & Sons. London: Chapman & Hall, Ltd. 1952. Pp. xii, 811. $6.50.)

STIGLER, G. J. *The theory of price.* Rev. ed. (New York: Macmillan. 1952. Pp. vii, 310. $4.50.)

In the rewriting of this familiar volume the author has "sought to emphasize the intimate relationship between theory and empirical evidence." Chapters have been added on the distribution of income by size and on general equilibrium.

Economic History; National Economies

COHEN, J. B. *Economic problems of free Japan.* Memo No. 2. (Princeton: Princeton Univ. Center of Internat. Stud. 1952. Pp. 96.)

A paper prepared at the request of the Center of International Studies which is making an analysis and evaluation of the Japanese peace settlement.

CRAF, J. R. *Economic development of the United States.* (New York: McGraw-Hill. 1952. Pp. xi, 598. $5.)

Gerschenkron, A., and Erlich, A. *A dollar index of Soviet machinery output, 1927-28 to 1937.* Rand ser., Apr. 6, 1951, R-197. (Santa Monica: Rand Corp. 1951. Pp. 357.)

Jennings, Sir I. *The economy of Ceylon.* (New York: Oxford Univ. Press. 1952. Pp. xiv, 194. $2.)

May, S., and associates. *Costa Rica, a study in economic development.* (New York: Twentieth Century Fund. 1951. Pp. xiv, 374. $3.)

Nurske, R. *Some aspects of capital accumulation in underdeveloped countries.* Lectures delivered at the Société Fouad Ier d'Economie Politique, de Statistique et de Législation, Cairo, April, 1952. (Cairo: National Bank of Egypt. 1952. Pp. 65.)

Pommery, L. *Aperçu d'histoire économique contemporaine. Vol. I, 1890-1939.* Vol. II, *1890-1952.* Rev. ed. (Paris: Lib. de Médicis. 1952. Pp. 421; 301. 600 fr., each.)

Riggs, F. W. *Formosa under Chinese Nationalist rule.* Published under the auspices of the American Institute of Pacific Relations. (New York: Macmillan. 1952. Pp. ix, 195. $2.75.)

The purpose of the volume is to present an account of Chinese Nationalist rule in Formosa since 1945, "with emphasis on recent internal developments and current problems." Almost one-half the volume is devoted to chapters on economic matters. There are also chapters on military, political and social aspects.

Sachs, E. S. *The choice before South Africa.* (New York: Philosophical Library. 1952. Pp. ix, 220. $5.75.)

The author is secretary of the Garment Workers' Union of South Africa. The book is essentially an analysis of the present political and social scene in that country. Parts 2 and 3, however, are respectively on "Economic Life" and "The Trade Union and Labour Movement."

Talbot, D. A. *Contemporary Ethiopia.* (New York: Philosophical Library. 1952. Pp. xii, 267. $4.50.)

Geographical, political, legal, religious, educational and economic aspects of the progress made in Ethiopia since about 1920. There are chapters on land tenure, agriculture, commerce and industry, finance, and communications.

Vucinich, A. *Soviet economic institutions—the social structure of production units.* Hoover Inst. stud. (Stanford: Stanford Univ. Press. 1952. Pp. x, 150. $1.75.)

Britain, 1952. An official handbook. Prepared by Central Office of Information, London. (New York: British Inf. Services. 1952. Pp. vii, 296, $2.)

The factual and statistical material provided by this handbook is presented under the following chapter headings: The British Isles; Government and Administration; Defense; Public Services; Finance, Trade and Industry; Social Welfare; Religion; Science; The Arts; The Press.

Economic survey for 1952. By the Chancellor of the Exchequer. Cmd. 8509. (London: H. M. Stat. Office. 1952. Pp. 47.)

Eighth report of the German federal government on the progress of the Marshall Plan July 1, 1951—September 30, 1951. (Bonn: Federal Ministry for the Marshall Plan. 1951. Pp. 90.)

Southeast Asia. (Washington: Mutual Security Agency. 1952. Pp. 54.)

Surinam, recommendations for a ten year development program. Report of a mission organized at the request of the governments of the Netherlands and of Surinam. (Baltimore: Johns Hopkins Press, for Internat. Bank for Reconstruction and Development. 1952. Pp. xxvi, 271. $5.)

10th Quarterly report on Germany. Jan. 1 to Mar. 31, 1952. (New York: U.S. High Comm. for Germany. 1952. Pp. x, 102.)

Statistics and Econometrics

Arrow, K. J. *An extension of the basic theorems of classical welfare economics.* Cowles Comm. papers, n.s. no. 54. Reprint from proceedings Second Berkeley Symposium on Math. Stat. and Probability. (Chicago: Univ. of Chicago Press. 1952. Pp. 25.)

BLAIR, M. M. *Elementary statistics.* (New York: Henry Holt. 1952. Pp. xiv, 735. $5.50.)

MARSCHAK, J. *Why "should" statisticians and businessmen maximize "moral expectation"?* Cowles Comm. papers, n.s. no. 53. Reprint from proceedings Second Berkeley Symposium on Math. Stat. and Probability. (Chicago: Univ. of Chicago Press. 1952. Pp. 13.)

SPEAR, M. E. *Charting statistics.* (New York: McGraw-Hill. 1952. Pp. xii, 253. $4.50.)

"This is a book on practical graphic presentation of statistical data, depicting not only types of charts and their appropriate use, but also subject matter of economic interest."

Sample surveys of current interest (fourth report). Stat. papers, ser. c, no. 5, Dept. of Econ. Affairs. UN. 1952. xvii. 6. (New York: Columbia Univ. Press. 1952. Pp. 56. 50 c.)

Statistical services of the United States government. Rev. ed., June, 1952. (Washington: Office Stat. Standards, Bur. of the Budget. 1952. Pp. 78.)

Economic Systems; Planning and Reform; Cooperation

FOSTER, W. Z. *History of the communist party of the United States.* (New York: Internat. Pub. 1952. Pp. 600. $6.)

GURIAN, W. *Bolshevism—an introduction to Soviet communism.* (Notre Dame: Univ. of Notre Dame Press. 1952. Pp. iv, 189. $3.25.)

A historical study of the development of (1) Bolshevist doctrine and (2) the Soviet regime. A third part is concerned with the reasons for the important and continuing influence of Bolshevism on world affairs. In general, the stress throughout the volume is on doctrinal and political aspects.

SURÁNYI-UNGER, T. *Comparative economic systems.* (New York: McGraw-Hill. 1952. Pp. x, 628. $5.50.)

VOORHIS, J. *The cooperatives look ahead.* Pub. affairs pamph. no. 32. (New York: Pub. Affairs Committee. 1952. Pp. 32. 25 c.)

Central economic plan 1952. (The Hague: Central Planning Bur. 1952. Pp. 44, xvii.)

Developments in consumers' cooperatives in 1951. B.L.S. bull. no. 1073. (Washington: Supt. Docs. 1952. Pp. 29.)

National Income and Social Accounting

DEANE, P. *Colonial social accounting.* Nat. Institute of Econ. and Soc. Research econ. and soc. stud. xi. (Cambridge: Univ. Press. 1952. Pp. xi, 347.)

DOWNING, R. I. *National income and social accounts—an Australian study.* (New York: Cambridge Univ. Press. 1952. Pp. 58. $1.)

GERBER, E. *Veränderungen der einkommensverteilung in England 1938-1948.* (Bern: Rösch, Vogt und Co. 1952. Pp. vii, 152. 16 sw. fr.)

KRAUS, O. *Sozialprodukt und volkseinkommen.* (Berlin: Duncker & Humblot. 1952. Pp. 123. DM 8.60.)

National accounts: income and expenditure, 1926-1950. (Ottawa: Canada Bur. of Statistics. 1951. Pp. 127.)

National and per capita incomes of seventy counties in 1949, expressed in United States dollars. U.N. Dept. of Econ. Affairs Stat. office pub. U.N. 1952 xvii 8. (New York: Columbia Univ. Press. 1952. Pp. 29. 25¢.)

Statistics of national income and expenditure. Stat. papers, ser. H, no. 1, Dept. of Econ. Affairs. *U.N. 1951. XVII. 4.* (New York: Columbia Univ. Press. 1952, Pp. 58. 50¢.)

Business Fluctuations; Prices

ANGUS, H. F. *Common sense about inflation.* (Toronto: Univ. of Toronto Press, for the Royal Society of Canada. 1952. Pp. 10. 35¢.)

DE LOGÈRES, M. *Les mouvements de prix aux Etats-Unis dans la période de reconversion.* Pub. de Centre d'Etudes Economiques. (Paris: Lib. Armand Colin. 1952. Pp. 223. 750 fr.)

GRUBER, K. *Conditions of full employment.* Translated into English by Jean Meyer. (London: William Hodge and Co. Ltd. New York: British Book Centre, distributor. 1952. Pp. vi, 141. $2.75.)

The general approach of the author is in terms of changes in the distribution of purchasing power as the ultimate cause of industrial fluctuations. Hence the first part of the book is devoted to an analysis of purchasing power and the circumstances determining it; while the second part examines the disturbance in circulation of purchasing power that occurs in the crisis.

KATONA, G. and LAUTERBACH, A. *The people versus inflation,* Pt. I. With Pt. II, *Teaching aids,* by J. C. Aldrich in collaboration with E. J. Gaines and J. B. Clemm. (Washington: Supt. Docs. 1952. Pp. 36.)

An "education resource unit" prepared for high school students and teachers, and made available by the Office of Price Stabilization.

The midyear economic report of the President—transmitted to the Congress July 19, 1952. Together with a report to the President, *The midyear 1952 economic review,* by the Council of Economic Advisers. (Washington: Supt. Docs. 1952. Pp. 188.)

Money and Banking; Short-Term Credit; Consumer Finance

BLOOMFIELD, A. I. *Report & recommendations on banking in South Korea.* (Pusan: The Bank of Korea. 1952. Pp. 92.)

HEGELAND, H. *The quantity theory of money—a critical study of its historical development and interpretation and a restatement.* (Göteberg: Elanders Boktryckeri Aktiebolag. 1951. Pp. x, 262.)

KRIZ, M. A. *The price of gold.* Essays in internat. finance, no. 15. (Princeton: Internat. Finance Section, Princeton Univ. 1952. Pp. 27.)

LEWIS, E. A., compiler. *Federal Reserve act of 1913 with amendments and laws relating to banking.* (Washington: Supt. Docs. 1952. Pp. 430.)

RITTER, L. S., editor. *Money and economic activity—a selection of readings in the field of money and banking.* (Boston: Houghton Mifflin. 1952. Pp. viii, 404. $2.95.)

Annual report of the Federal Deposit Insurance Corporation for the year ended Dec. 31, 1951. (Washington: Fed. Deposit Ins. Corp. 1951. Pp. xix, 208.)

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NOTES

Announcements of Retirements

It has been suggested that the *Review* publish annually a list of members of the profession retiring from active teaching. The first of such lists will be published in the March 1953 issue. Department heads of colleges and universities will be asked to submit the names of members of their staffs who will become emeritus in 1953. Individuals who wish to be included in the list are asked to advise department heads or the editor of the *Review* not later than January 15, 1953.

Publications

International Economic Papers, No. 1, the first annual volume of translations into English of important articles selected by an editorial board appointed by the executive committee of the International Economic Association, has been published by the Macmillan Company. The volume is priced at $3.50 but a special price of $2.80 net, plus 12 cents postage, has been arranged in cooperation with the Macmillan Company for members of the American Economic Association. Purchases at the special rate may be made by placing an order with Dr. James Washington Bell, Secretary-Treasurer, American Economic Association, Northwestern University. A covering check, made out to the Macmillan Company, must accompany the order.

This volume of *International Economic Papers* was reviewed in the September 1952 issue of this *Review*.

The Journal of Industrial Economics

The Journal of Industrial Economics is a new Anglo-American journal to be published by Blackwell's of Oxford. The board of editors includes P. W. S. Andrews (general editor), Sir Henry Clay, Joel Dean, R. B. Helflebower, John Jewkes, and E. S. Mason.

The journal will be especially devoted to the economic problems of industry and commerce. The intention is to publish articles of a scientific character, of value both to economists and to businessmen. It will offer a medium for the publication of the results of academic industrial research increasingly being carried on both in America and Britain.

Publication will be three times a year. The prepaid annual subscription is one guinea in English currency, or $3.40 in U.S. currency, post free. Remittances should be sent to Messrs. Basil Blackwell, Broad Street, Oxford.

The board of editors will be pleased to consider manuscripts within the field of interest of the journal. Articles in England should be sent to the General Editor, care of Messrs. Basil Blackwell, 49 Broad Street, Oxford; in the United States they should be sent to Professor R. B. Heflebower, Northwestern University, Evanston, Illinois.

Research Fellowships and Grants

The Social Science Research Council has announced fellowships and grants of two distinct types to be offered in 1953: (1) Those designed exclusively to further the training of research workers in social science and designated as *Research Training Fellowships* and *Area Research Training Fellowships;* (2) Those designed to aid scholars of established competence in the execution of their research, namely, the *Travel Grants for Area Research, Grants-in-Aid of Research,* and *Faculty Research Fellowships*. None of the awards in the second group is available to students working for degrees.

Inquiries should be addressed to the Social Science Research Council, 726 Jackson Place, N.W., Washington 6, D.C., and applications, on forms provided by the Council, must be filed not later than January 5, 1953.

An announcement describing Faculty Research Fellowships will be supplied on request.

Institute of Social Studies in the Hague

In October 1952 the Institute of Social Studies, an internationally orientated Institute of graduate level, was established in the Hague. The Institute has been made possible by the combined efforts of all the universities of the Netherlands and its teaching staff is largely recruited from these universities, with visiting professors from other countries. The general object of the Institute is the advancement of knowledge in the social sciences with special emphasis on their comparative and international aspects. Courses are given in the English language. Students who apply are expected to have had previous training in at least one of the branches of social studies, economics, comparative law or related subjects.

Deaths

Samuel M. Dix died on September 6, 1952.

Harold A. Innis, of the University of Toronto, died November 8, 1952.

Edmund T. Miller, professor of economics at the University of Texas, died May 6, 1952.

Howard H. Preston, professor of banking and finance and formerly dean of the College of Economics and Business at the University of Washington, died September 30, 1952.

Wendell P. Raine, visiting professor at the University of Miami since his retirement from the Wharton School of the University of Pennsylvania in 1951, died September 12, 1952.

Appointments and Resignations

Carl E. Abner has been promoted to assistant professor of economics at the University of Louisville.

D. K. Andrews has resigned from Tufts College to accept a position at the University of Vermont.

Anthony L. Angeline, formerly of the College of Saint Elizabeth, has been appointed instructor in economics at Niagara University.

Paul Arnolds-Patron has been appointed professor of economics and head of the department of business administration at the College of the Ozarks.

C. A. Ashley has been appointed chairman of the department of political economy of the University of Toronto.

George Babilot has been appointed instructor in economics in the College of Business Administration, University of Nebraska.

Frank T. Bachmura has been appointed assistant professor of economics at the University of Wyoming.

Edwin H. Baldrige has been promoted to assistant professor of accounting in the School of Business Administration, University of Pittsburgh.

Robert F. Barlow has been appointed instructor in economics at Colby College.

Philip W. Bell has been appointed assistant professor of economics at Haverford College.

J. W. Bennett has been appointed assistant professor of transportation in the College of Business Administration, University of Tennessee.

Charles S. Benson has been advanced to the rank of assistant professor of economics at Bowdoin College.

Robert F. Berner has been promoted from lecturer to assistant professor of statistics at the University of Buffalo.

Roy G. Blakey, formerly of the University of Minnesota, has been asked to continue his Fulbright lectureship at the University of Ankara.

Rudolph Blitz, of the University of California, is now instructor in economics at Northwestern University.

Paul Blomgren has been appointed assistant professor of transportation at Indiana University.

Roy Blough has resigned as a member of the Council of Economic Advisers to the President to become principal director of the Department of Economic Affairs of the United Nations.

Howard R. Bowen, formerly of the University of Illinois, has been appointed professor of economics at Williams College.

Royall Brandis has resigned from Duke University to accept an appointment as assistant professor of economics at the University of Illinois.

Norman Breckner, of the University of Chicago, has been appointed lecturer in economics at Northwestern University.

Marjorie S. Brookshire has been appointed instructor in economics at the University of Arizona.

Carl F. Brown has joined the staff of the Lincoln-Mercury Division of the Ford Motor Company as a personnel analyst.

Harvey C. Bunke has been appointed associate professor of transportation at the University of Tennessee.

Leo S. Burrington has resigned from Western Reserve University to accept an appointment as assistant professor of economics at John Carroll University.

Arthur H. Butler has been promoted to assistant professor of economics at the University of Buffalo.

Carl R. Bye, chairman of the department of economics, Syracuse University, has assumed an additional post as associate dean of the Maxwell School of Citizenship and Public Affairs.

Claude A. Campbell has resigned from the State College of Washington to become professor of finance at Florida State University.

Reynold E. Carlson has been on leave this term from Vanderbilt University to act as economic consultant to the Joint Brazilian-United States Development Commission.

Robert W. Carney has been appointed assistant professor of economics at the University of Louisville.

Allan Cartter, of Yale University, has been appointed assistant professor of economics and research associate at Duke University.

Gordon C. Chapman has resigned from Indiana University to accept an appointment as associate professor of marketing at Saint Louis University.

Frank C. Child has resigned from Williams College to accept an appointment as instructor in economics at Pomona College.

Richard V. Clemence has been promoted to the rank of associate professor of economics at Wellesley College.

Robert L. Clewett, formerly of Montana State University, has been appointed instructor in marketing in the School of Business Administration of the University of Michigan.

Sanford Cohen is assistant professor of economics at Western Reserve University and is at the same time continuing to serve with the Cleveland regional office of the Wage Stabilization Board.

Robert H. Cole has been promoted from instructor to assistant professor of marketing at the University of Illinois.

Robert T. Collins has resigned from Kansas City University to accept an appointment as assistant professor of economics at Alabama Polytechnic Institute.

John T. Conlon has been appointed instructor in economics at Michigan State College.

J. Howard Craven has resigned from the University of Wyoming to accept a position with Point IV Program in Bolivia.

Sidney Davidson has been promoted to associate professor of accounting at the Johns Hopkins University.

Carl Dennler, Jr., of the University of Missouri, has been appointed instructor in Business Administration at the University of Maine.

Robert L. Dickens has been promoted to assistant professor of accounting at Duke University.

Norton T. Dodge has been appointed instructor in economics at Wellesley College.

C. H. Donovan has been appointed acting head of the department of economics, University of Florida.

Robert Dorfman has been promoted from assistant professor to associate professor of economics at the University of California.

Douglas F. Dowd has been appointed associate in economics at the University of California.

Howard S. Dye has been promoted to associate professor of economics at the University of Tennessee.

R. Parker Eastwood has been promoted from associate professor to professor of business statistics in the Graduate School of Business, Columbia University.

George A. Edwards has been appointed instructor in marketing in the Graduate School of Business of Columbia University.

Ernest J. Enright has been appointed assistant professor of economics at Tufts College.

Harry Ernst has been appointed instructor in economics at Tufts College.

Merton W. Ertell has been promoted from lecturer to assistant professor of economics and industrial relations at the University of Buffalo.

Marten S. Estey, formerly of the New York State School of Industrial and Labor Relations, Cornell University, is now serving as lecturer in economics at Michigan State College.

David M. Faulkner has been appointed assistant professor of industrial management at the University of Tennessee.

William M. Foley has been appointed instructor in transportation at the University of Tennessee.

John H. Frederick has been appointed chairman of the department of business organization at the University of Maryland.

Earl French has been appointed instructor in economics and business administration at the University of Maine.

John Friedmann has joined the staff of the Tennessee Valley Authority as economist in the Division of Regional Studies.

George Garvy has resumed his duties as senior economist of the Federal Reserve Bank of New York after serving a period in Panama as an advisor on fiscal matters to the International Bank for Reconstruction and Development. He is also visiting lecturer at Columbia University for the current academic year.

Raymond S. Ginger is on leave from Western Reserve University for the academic year to occupy a fellowship in business history at Harvard University.

I. Bernard Goodman is on a year's leave from the International Monetary Fund to be visiting lecturer in economics at the University of Wisconsin.

H. A. John Green, formerly of the Massachusetts Institute of Technology, has been appointed instructor in economics at Brown University.

G. Grosschmid has been promoted from assistant professor to associate professor of economics at Duquesne University.

Ingrid Hahne has been promoted from instructor to assistant professor of economics at Temple University.

Robert M. Haig has been appointed McVickar professor emeritus of political economy, Columbia University, as of October 1952.

William A. Hambley, Jr., has accepted a position with Procter and Gamble Company.

Glover D. Hancock has been named professor of economics emeritus at Washington and Lee University.

Albert G. Hart, of Columbia University, has received a Fulbright award and will be at the Institut de Science Économique Appliquée in Paris during the current academic year.

Bruno J. Hartung has been promoted from instructor to assistant professor of economics at Duquesne University.

A. J. Hill has been promoted from assistant professor to associate professor of accounting at Alabama Polytechnic Institute.

Thomas P. Hogan has been appointed instructor in economics in the School of Business Administration of the University of Pittsburgh.

George Horwich, of the University of Chicago, has joined the staff of the department of economics of Indiana University as instructor in statistics.

Howard T. Hovde has been elected vice president and consultant of The Econometric Institute, Inc., New York City.

James C. Ingram has been appointed acting assistant professor of economics at the University of North Carolina.

Clifford D. Jacobs has retired from the State College of Washington as professor emeritus of business administration.

Daniel J. James, formerly of the University of Illinois, is assistant professor of marketing at the University of Georgia, Atlanta.

C. Hayden Jamison has been appointed assistant professor of economics at Beloit College.

Everett H. Johnson has been promoted from associate professor to professor of statistics at the George Washington University.

Robert W. Johnson has been promoted from lecturer to assistant professor of finance at the University of Buffalo.

H. G. Johnston is visiting professor of economics in the department of political economy of the University of Toronto.

Gerald I. Jordan, of Claremont Men's College, will lecture at University of Utrecht and study the Netherlands judiciary during the German occupation under a Fulbright fellowship.

Mark L. Kahn, assistant professor of economics at Wayne University, has been named director of case analysis for the Wage Stabilization Board, Region VI-B.

Emil Kauder has resigned from the University of Wyoming to accept a position as head of the department of economics of Illinois Wesleyan University.

Jacob J. Kaufman has been promoted from lecturer to assistant professor of economics at the University of Buffalo.

Charles C. Killingsworth has been granted leave from Michigan State College to serve as vice-chairman of the Wage Stabilization Board.

Hugh B. Killough has been granted leave of absence this semester from Brown University to serve in Indonesia as economic advisor to the J. G. White Engineering Corporation.

Peter S. King has been appointed faculty lecturer in marketing at Indiana University.

Walter Kirk has been appointed assistant professor of finance in the School of Business Administration of the University of Pittsburgh.

Bob R. Kittleson is acting instructor in economics at the State College of Washington.

John V. Krutilla has joined the staff of the Tennessee Valley Authority as industrial economist in the Division of Regional Studies.

William E. Kuhn has been appointed assistant professor of economics at the University of Wyoming.

Enrique Lerdau, formerly of the University of Wisconsin, has accepted a two-year appointment as lecturer in economics at the University of Auckland, New Zealand.

Kullervo Louhi, of the School of Business of the University of Chicago, has been appointed editor of *The Illinois Certified Public Accountant*, official journal of the Illinois Society of Certified Public Accountants.

Richard R. MacNabb, formerly of Northwestern University, is now economist and writer

for the Commission for Technological Advancement, Machinery and Allied Products Institute, Chicago.

William H. Martin has resigned from Williams College to accept an appointment as assistant professor of economics at the University of Iowa.

Edward Marz is acting head of the economics department at Hofstra College.

Cecil C. McGee has accepted a position as assistant professor of accounting at Alabama Polytechnic Institute.

Edgar McKay has been promoted to assistant professor of economics at the University of Maine.

William H. McPherson, of the University of Illinois, is serving under a grant from the Department of State as lecturer at the Akademie der Arbeit in Frankfurt and the Akademie für Gemeinwirtschaft in Hamburg. In the next semester he will be at the University of Istanbul as Fulbright lecturer.

Gerald M. Meier has been appointed instructor in economics at Williams College.

Frederic Meyers, formerly of the Institute of Labor and Industrial Relations of the University of Illinois, has accepted an appointment as associate professor of economics at the University of Texas.

Paul A. Montavon has resigned as assistant professor of economics at Quincy College to become assistant professor of economics at the University of Notre Dame.

Lloyd Morrison has been appointed head of the accounting department at Louisiana State University.

Sanford Mosk, of the University of California, is now studying economic development problems in Africa under the auspices of the Carnegie Corporation of New York. Next term he will be visiting professor of economics at the University of Guatemala in Guatemala City.

Ingolf H. E. Otto, formerly of George Washington University, has accepted an appointment as associate professor of insurance and management at the University of Kansas City.

C. F. Owen has been appointed lecturer in economics in the department of political economy of the University of Toronto.

Tord Palander of Uppsala University, Sweden, is serving as visiting professor of political economy at the Johns Hopkins University.

G. Neil Perry has held since April 1952 the positions of alternate executive director for Canada, International Monetary Fund and International Bank for Reconstruction and Development and financial counsellor to the Canadian Embassy in Washington, D.C.

Evelyn Pope has been promoted to assistant professor in the School of Business Administration of the University of South Carolina.

Arthur R. Porter, Jr., of Hanover College, has been appointed a public member of the Regional Wage Stabilization Board, 7th region.

James Potter, on leave of absence from the London School of Economics, is visiting assistant professor of economic history at Yale University.

J. Richard Powell has been promoted to assistant professor of economics at the University of California at Los Angeles.

John H. Power, formerly with the Division of International Finance, Board of Governors of the Federal Reserve System, has been appointed instructor in economics at Williams College.

Olin S. Pugh has been promoted to assistant professor of economics at the University of South Carolina.

Lloyd G. Reynolds has been appointed Sterling professor of economics at Yale University.

William M. Reynolds has been appointed instructor in economics at Michigan State College.

Samuel B. Richmond has been promoted to assistant professor of business statistics at the Graduate School of Business, Columbia University.

John J. Riley is now chief of Management Training Division, U.S. Signal Corps, Fort Holabird, Maryland.

Frank L. Roberts has resigned from the University of Illinois to accept an appointment as associate professor of marketing at the University of Nebraska.

Earl R. Rolph is on leave from the University of California this year to work on a research project at the National Bureau of Economic Research.

James H. Rossell has been promoted to associate professor of accounting in the School of Business Administration of the University of Pittsburgh.

Arnold Rothstein has been appointed assistant professor of business administration at the State College of Washington.

Marvin E. Rozen has been appointed lecturer in economics at the University of California.

George J. Ruschell has been appointed to the staff of the University of Kentucky Bureau of Business Research.

Oliver Sarosi has been appointed assistant professor of finance at Duquesne University.

Donald W. Scotton, formerly of the University of Illinois, is assistant professor of marketing at Detroit University.

Ewing P. Shahan has been named dean of the College of Arts of Vanderbilt University.

Harold A. Shapiro has been appointed assistant professor of economics at the Arkansas State Teachers College, Conway, Arkansas.

Douglas S. Sherwin is on loan service from Phillips Chemical Company, Bartlesville, Oklahoma, to the Reconstruction Finance Corporation.

Carl S. Shoup has been appointed McVickar professor of political economy at Columbia University. He continues to be a member of the Graduate School of Business faculty.

Carolyn S. Solo has been promoted to assistant professor of economics at Wellesley College.

John V. Spielmans has been promoted to professor of economics in the College of Business Administration of Marquette University.

Boris M. Stanfield, of Columbia College, has accepted a visiting professorship at the Ecole Libres des Hautes Etudes in New York City for the current academic year.

Peter O. Steiner has been appointed assistant professor of economics at the University of California.

Marvel M. Stockwell, of the University of California at Los Angeles, was elected president of the Western Economic Association at the Redlands Conference in September.

J. R. N. Stone, of Cambridge University, has been appointed visiting professor of political economy at the Johns Hopkins University for the February 1953 term.

James H. Street, formerly of Haverford College, has been appointed assistant professor of economics at Rutgers University.

Francis H. Stubbs has been appointed instructor in economics and finance at the University of Missouri.

Sidney C. Sufrin, formerly director of the Business and Economic Research Center, is now director of the Maxwell Research Center, Maxwell School of Citizenship and Public Affairs, Syracuse University.

Theo Surányi-Unger, of Syracuse University, conducted a seminar in economics at the Austrian College in Alpbach, Tyrol, last summer and is now lecturing at the University of Kiel, Germany.

Milton C. Taylor is acting director of the Division of Research and Statistics of the Department of the Treasury, Puerto Rico.

William F. Thompson has been promoted to associate professor of economics at the University of Louisville.

S. Triantis has been appointed lecturer in economics in the department of political economy of the University of Toronto.

Elliott O. Watson has accepted an appointment as assistant professor of economics at Central College.

S. G. Wennberg has been named chairman of the department of economics and business at the University of Missouri.

Samuel Z. Westerfield, Jr., has been promoted to professor of economics and has been named director of the School of Business Administration at Atlanta University.

Charles Wolf, Jr., is presently with the Technical Cooperation Administration of the Department of State as acting chief of the Program Planning Staff of the Asian Development Service.

J. N. Wolfe has been appointed lecturer in economics in the department of political economy, University of Toronto.

Cyril Zebot has been promoted from associate professor to professor of economics at Duquesne University.

Walter Zukowski, formerly of Clark University, has been appointed instructor in business administration at Colby College.

VACANCIES AND APPLICATIONS

The Association is glad to render service to applicants who wish to make known their availability for positions in the field of economics and to administrative officers of colleges and universities and to others who are seeking to fill vacancies.

The officers of the Association take no responsibility for making a selection among the applicants or following up the results. The Secretary's Office will merely afford a central point for clearing inquiries; and the *Review* will publish in this section brief description of vacancies announced and of applications submitted (with necessary editorial changes). Since the Association has no other way of knowing whether or not this section is performing a real service, the Secretary would appreciate receiving notification of appointments made as a result of these announcements. It is optional with those submitting such announcements to publish name and address or to use a key number. Deadlines for the four issues of the *Review* are February 1, May 1, August 1, and November 1.

Communications should be addressed to: The Secretary, American Economic Association, Northwestern University, Evanston, Illinois.

Vacancies

Sales economist and sales management: Would like to employ men of outstanding intellectual ability who have good background in economics and sales psychology with the ability of making the customer want to buy. Must be of highest caliber with the ability to perform liaison with state and civic officials. Car necessary. Under 30, free to travel, interested in $20,000 to $25,000 earnings. Expanding company; leader in its field; has openings in a number of states. Write full details to H. D. Umstott, Vice President, National Headquarters, 2701 14th Street, N.W., Washington 9, D.C.

Business statistics: Assistant professor or associate professor, Southwestern state university. Position to be filled for second semester, 1952-53. Ph.D. degree preferred but master's degree plus experience considered. Salary $4,500-$5,500 for eleven months, depending upon training and experience. Half-time teaching, half-time statistician in Bureau of Business Research. P154

Economic analyst: Distinguished national organization operating primarily in economic study field desires economic analyst with a background in economics and writing ability, preferably in late twenties or early thirties. Probable location Washington, D.C. Give education, job experience, salary record. Replies will be held in strict confidence. P155

Economists Available for Positions

Personnel administration, labor relations, banking, theory: Man, 36, married. Experienced teacher or administration; 12 years of experience in leading universities and business firms. Research, publications, government, and business consultant. Available in February, 1953. E194

Economics and business administration: Man, 49, B.S. (agricultural economics), M.A., and near Ph.D. (marketing). Seventeen years of college and university teaching; extensive business and commercial experience; over 4 years as government economist or business analyst. Available immediately, preferably Pacific Northwest. E239

Money and banking, fiscal policy, business cycles, international economics, investments: Man, 38, married, Ph.D. Experience as a newspaperman and 5 years of teaching experience. Desires research or teaching position. E263

Economic analysis, business cycles, public finance, money and banking, national income, international economics, statistics: Man, 34, married, Ph.D. residence completed. Seven years as economist-writer with research and investment organization; brief teaching experience; research in Middle East conomy. Seeks research, writing, or teaching position, West Coast preferred. E278

Economic principles, theory, history of economic thought, American economic and financial history, security markets, corporation finance, labor and allied subjects: Man, 39, married, B.S. (*magna cum laude*), 1949, M.A., 1950, all examinations and course requirements toward Ph.D. completed and expects to finish dissertation at New York University by June, 1953. Now on teaching staff of Eastern college. Seeks teaching position starting September, 1953. E318

Economic history, labor economics, business cycles, money and banking, history of economic thought, introductory economics, economic statistics, public finance, industrial market research: Man, 30, married, completed all examination and course requirements toward Ph.D. at Columbia University, thesis in preparation. Two years of teaching economics; past year economist for large national manufacturing corporation. Desires teaching or research position. Versatile. E340

International trade, economic principles, public control of business, money and banking, history of economic thought, labor problems, business cycles, statistics, business administration: Man, 27, married, B.B.A.; M.S., Columbia University; honors; completed Ph.D. residence requirements and oral examinations at Columbia University, working on dissertation. Extensive teaching experience on economics at large Eastern university. Desires teaching and/or research position. Available immediately. E360

Economic principles, consumption, theory and history of ideas, insurance, monetary theory, business cycles, location, statistics, marketing principles and research, sales management, advertising principles, copy and layout, direct mail, industrial, wholesaling: Man, 35, married, B.B.A. in marketing, M.A. in economics. Experience as sales manager, economic, marketing, and opinion researcher; some teaching. Desires position as a teacher, researcher, or sales manager in Northeast. Available immediately. E408

International trade, corporation finance, investments, economic theory, history of economic thought, management, accounting: Man, 29, M.S. (management), M.A. (economics), Ph.D. expected end of 1952, University of Illinois. Brief experience in teaching; 5 years in foreign trade and business administration. Available for academic or nonacademic appointment in January, 1953. E414

Economic analysis, public finance, foreign trade, money and banking, statistics, U. S. economic history, economic geography, personnel: Woman, M.A., Columbia University. Four years of experience as research-administrative assistant. E418

International economics, money and banking, economic theory, public finance, economic history, etc.: Man, 41, A.B., University of Kansas, 1933 (Phi Beta Kappa); Certificate in Advanced International Studies, Université de Paris, 1934; Certificat in Russian Language and Literature, Ecole Nationale des Langues Orientales, Paris, 1935; M.A., 1941, Ph.D., 1952, Harvard University. One year of university teaching experience; 11 years of foreign work, study, and travel, including 3 years as member of the American Embassy in Moscow and 3 as Representative of the American Friends Service Committee in Austria. Seeks teaching or research position. Arthur G. Billings, Delphis, Kansas.

Labor, public finance, elementary economics: Man, 31, married, Ph.D. Four years as instructor, Big Ten university. Now employed by government agency. Research experience and publications. Interested in teaching post or job with writing opportunity. E419

Air transportation, international economics, international organization, history of economic thought, economic history, contemporary economic theory, public finance: Man, 32, B.A., M.A., Ph.D. in economics; 11 years of economic research in several areas of the federal government, including national income, fiscal policy, international economics, and air transportation; currently employed as economist in one of the aviation agencies of the federal government. Desires a teaching position in economics. E420

Statistics, economics, organization and administration: Man, 34, married. Teaching and practical experience and command of several languages; seeks position as teacher, economist, or research worker. E421

Transportation, public utilities, business and government, insurance, economic history, theory, other economics and business: Man, 33, married, M.B.A., Ph.D., California. University teaching; government economist; some business experience. Desires permanent teaching and/or research position. Available in spring or fall of 1953. Roy J. Sampson, Box 304, Route 1, Forest Grove, Oregon.

International economics, money and credit, principles, Far Eastern economics, public finance, business cycles, price and income analysis, economics of mobilization, economic theory and its history: Man, 30, married, B.A., M.S., all course requirements for Ph.D. Five years of teaching; 3 years as assistant professor and division head, Western state college. Chief economist, territorial office, stabilization agency, since July, 1951. Seeking teaching, research, or combination. Available in spring, summer, or fall semesters, 1953. E422

Public utilities, transportation, regulation, public administration, agricultural economics, accounting: Man, 59, Ph.D., Cornell. Ten years agricultural extension; 20 years in responsible position with regulatory commission. Some teaching while graduate student. Desires to return to academic life. Available in June, 1953. E423

Economic statistics, manpower studies, productivity and technological developments, social security and labor problems, national income measurement and analysis: Man, 35, married, M.A. in economics, completing residence for Ph.D. Ten years of economic research in federal agencies; now with Bureau of Labor Statistics; formerly with Social Security Board; articles in journals. Seeks research and writing position with university bureau of business research, industrial relations institute; investment house; economic research organization; trade or labor publication or organization. Practical and versatile. E424

Principles, economic history and institutions, government and business, structure of the American economy, economics of industry, regional planning, comparative economic systems: Man, 29, will receive Ph.D. in January, 1953. Four years of teaching experience and 2 of research. Desires teaching position. Will be available for interviews at Chicago convention. Prefers West Coast but will consider any location. Available in June or September, 1953. E425

Principles of economics, American economic history, development of economic thought, comparative economic systems, international trade, money and banking: Man, 33, married, B.S., M.A., New York University, course work for Ph.D. completed. Four years of university teaching experience. Seeks position as visiting lecturer for summer, 1953. E426

Labor, economic theory, history of economic thought, money and banking: Man, 30, married, B.S., 1947, M.S., 1948, Texas A. and M., Ph.D., 1950, University of Illinois. Four years of teaching experience, including principles, labor, money and banking, history of economic thought, and graduate theory. One year as industrial relations analyst with wage stabilization board. Desires teaching and/or research position. Available in February, 1953. E427

Transportation, U. S. economic history, labor economics, political economy: Man, 32, B.A. (economics), M.A. in Education, Yale, M.A. (economics), LL.B., Boston, Ph.D. residence requirements completed. Experience in teaching, research, and writing. Seeks teaching or research position. E428

Labor problems, trade unionism, economic principles, economic analysis, social security, money and banking: Man, 29, married, Ph.D. residence and written examinations completed. Teaching experience at two large New York universities. Now employed by federal government. Desires teaching position. Available immediately. E429

International trade, business cycles, business economics: Woman, married, D.C.S. European and American experience. Available for academic or nonacademic appointment. E430

Labor economics: Man, married, M.A., Ph.D. course requirements completed. Former unemployment insurance claims examiner, New York State Department of Labor. Available for handling of unemployment insurance problems (Experience Rating) in the New York metropolitan area. E431

Corporation finance, money and banking, accounting, consumer and real estate finance, investments: Man, 41, married, Ph.D. in finance and C.P.A. Extensive research experience with government agencies, Federal Reserve Bank, and a private research organization; 8 years of undergraduate and 3 of graduate teaching; numerous publications. Currently in an administrative capacity with a research organization. Desires to return to teaching. Available in February or September, 1953. E432

American economic history, business cycle analysis, labor problems, economic theory, history of economic thought: Man, 33, married, B.S.S., M.A., Ph.D. course and examination requirements fulfilled, with considerable progress made on dissertation, and degree expected in June, 1953, New York University. Eleven years of government experience; 1 year of teaching experience. Available for academic appointment in February, 1953. Also will consider research or advisory position. E433

Labor, comparative economic systems, current economic problems, economic history, economic and social thought, money and banking, public finance, international trade, personnel and manpower policy: Man, 37, married, M.A., and Ph.D. residence completed at Columbia University. Six years of teaching economics and social science as well as background in adult education; 3 years as editor and research director in the book publishing and public relations field dealing with labor relations; 3 years of personnel and industrial relations work in industry; market and opinion research experience. Interested in teaching, research, writing, editorial and/or administrative positions. Available in February, 1953. E434

Santa's suit was made by a South Korean who had never seen or heard of Santa Claus. South Koreans also took turns in drawing the jeep trailer.

A whole Company of Marines said "THANKS"

How telephone women helped make a Merry Christmas for the men in Korea

Helping others to have a Merry Christmas is a tradition among telephone people. In recent years there has been an increasing number of gifts for those in the service.

One group of telephone women observed last Christmas by sending a holiday package to every man in Company E of the 1st Marines in Korea. They adopted this company in remembrance of Corporal Richard E. deVilliers, a gallant fellow-worker who was killed in action while serving with Company E.

After the packages were opened, a scroll of appreciation was signed by every member of the company and sent back to this country. More than two hundred of the men wrote personal letters of thanks.

It all turned out so well that it was decided to do the same thing again this year. So hundreds of packages are again on their way to Korea.

THIS IS JUST ONE OF MANY WAYS in which telephone people in many communities say "Merry Christmas." Whether it's dressing dolls for orphaned children, or contributing trees and turkeys and baskets of food, telephone men and women are spurred by the desire to be helpful. Through all the year they try to keep good will and The Voice With The Smile in telephone service.

BELL TELEPHONE SYSTEM